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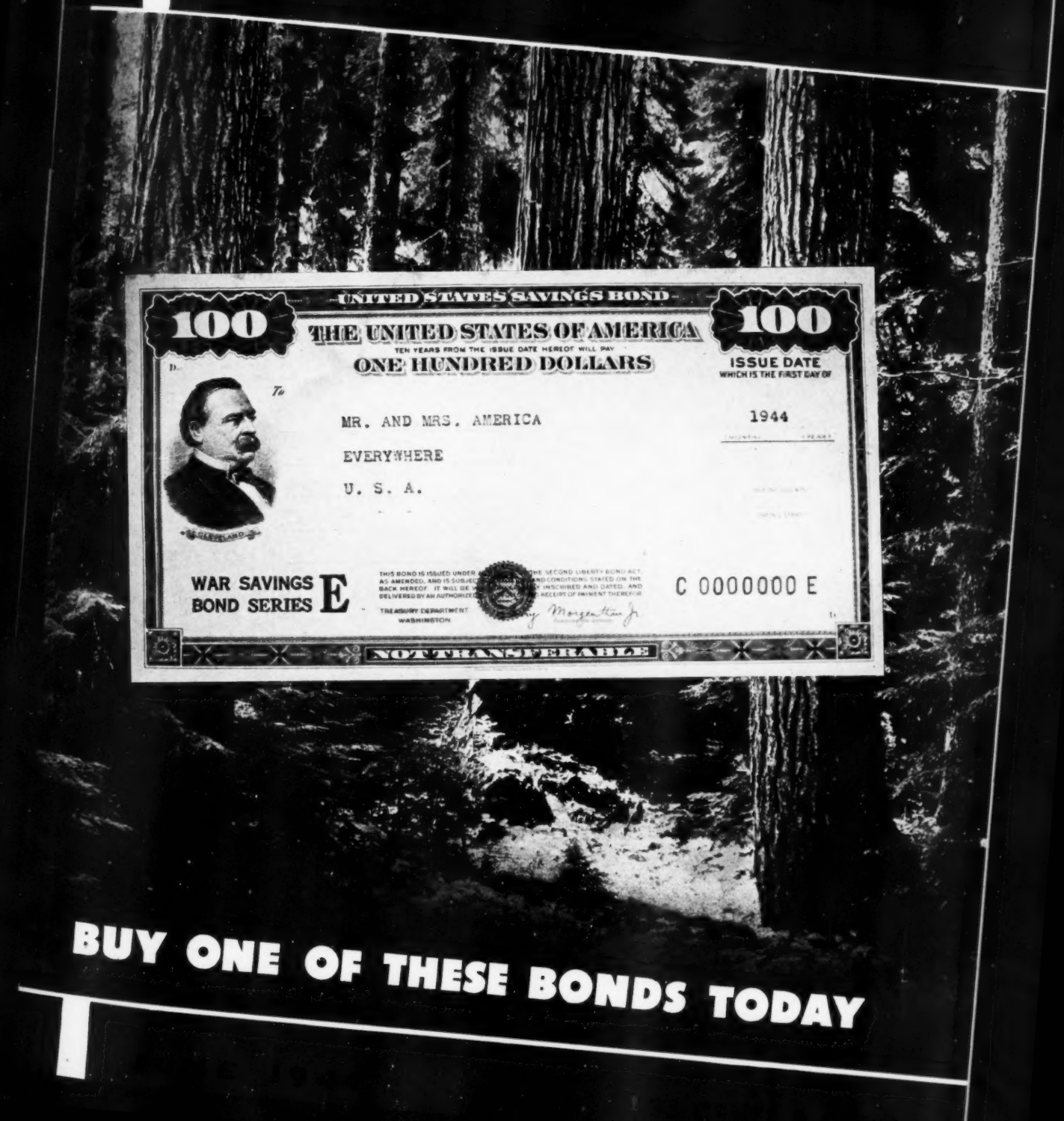

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AMERICAN FORESTS

VOLUME 50 | JUNE, 1944 | NUMBER 6

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THE COVER

Designed to Further the Fifth War Bond Drive
"Buy One Of These Bonds Today!"

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American Forests

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THE
AMERICAN FORESTRY
ASSOCIATION

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The American Forestry Association, founded in 1875, is a citizens' organization for the advancement of intelligent management and use of the country's forests and related resources of soil, water, wildlife and outdoor recreation.

Its educational activities seek to bring about a better appreciation and handling of these resources, whether publicly or privately owned, that they may contribute permanently to the welfare of the nation and its people.

In addition to publication of its magazine—AMERICAN FORESTS—designed to keep before the people of the country important conservation questions and issues, the Association carries on educational work in various fields including forest fire prevention, reforestation, protection of wildlife, prevention of soil erosion, preservation of wilderness areas, establishment of national forests and parks, advancement of forestry by private endeavor, the teaching of conservation in schools and the promotion of research in timber growing and forest utilization.

The Association is independent and non-commercial, and has no connection with any federal or state governments. Its resources and income are devoted to the advancement of conservation in the interests of public welfare, and all citizens are welcomed to membership.

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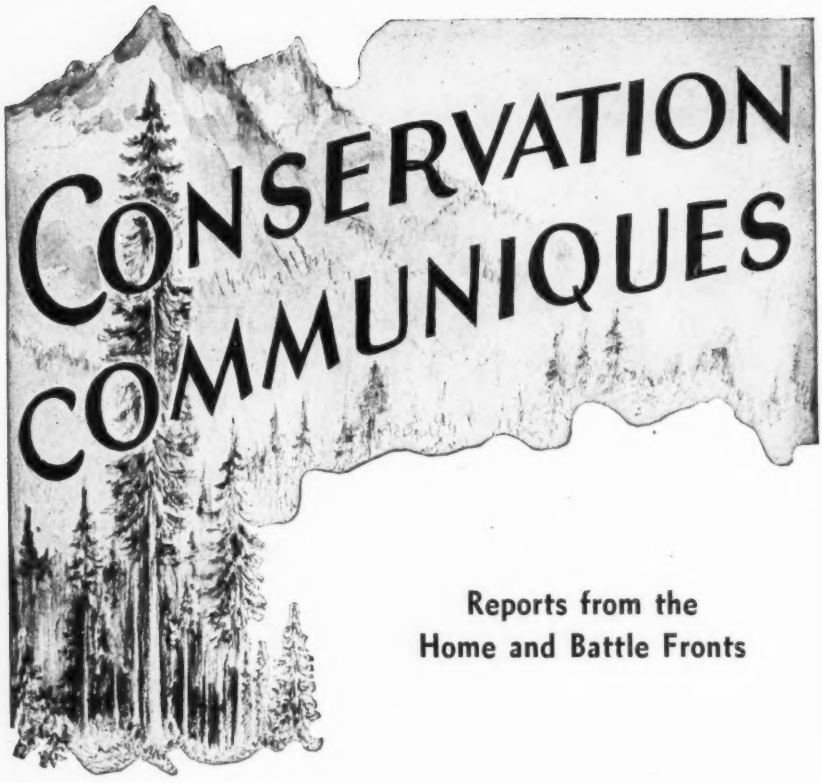

Reports from the Home and Battle Fronts

According to Donald M. Nelson, WPB chairman, the problem of producing enough wood and paper containers to meet military and essential civilian needs is one of the most serious facing the country today. Main difficulty is a shortage of manpower in the woods to produce the needed raw material. Military requirements for boxing, crating and dunnage have nearly doubled since 1942, while lumber production has declined. Production of paperboard containers is holding 1943 level, but demands are up.

• • • •

War Manpower Commission Chairman Paul V. McNutt is attempting to improve the situation by recruiting 60,000 lumbering and pulpwood workers. Aim is to restore 1943 level of around 500,000 men. March reports from 2,000 operators, employing 270,000 workers, show labor shortages totaling more than 40,000 men. WPB, meanwhile, in an effort to hold more workers on the job, has announced new food rations for woodsmen. From one to sixty additional points a month will be allowed for meats, fats and sugar.

• • • •

Half a million fertilized fish eggs—whitefish and trout — a gift from this country to Peru, were recently flown from the Great Lakes to famous Lake Titicaca in the heart of the Andes, highest navigable lake in the world. The 4,000-mile air trip required but four days.

• • • •

It pays to train soldiers to fight forest fires. Recently, in the South Pacific, a detachment of engineers had the job of bridging a river, but before it could be completed the Japs fired the jungle around them. It burned much like cellophane. Fortunately, a number of the men, trained in fire control technique under the Army-Forest Service program, quickly cleared a control line and backfired. It saved their lives—enabled them to complete their mission.

• • • •

A large plant with modern equipment for drying and conditioning balsa wood has been completed at Guayaquil, Ecuador. It has a yearly capacity of 8,000,000 square feet. Under direction of the Foreign Economic Administration, the plant was erected in the record time of eight weeks to keep abreast of greatly increased balsa production. Balsa is used mainly in aircraft construction and in life rafts and preservers.

Finland's winter logging program, slightly lower than last year, is estimated at 205,000,000 cubic feet, half of which was on private forests, one-quarter on state forests, and the remaining quarter on company and municipal forests. Private forests also furnished two-thirds of all fuelwood, or 12,000,000 cubic meters.

• • • •

The *London Economist* makes an interesting observation on how bombed-out German people are meeting their housing problem. On the fringe of most towns, it points out, are small garden plots tended by generations of industrial workers and small businessmen. Each garden has its "summer house," a small wooden structure capable of accommodating a family during the summer months. These houses, or *laubens*, no doubt now occupied the year 'round, are serving as models for the makeshift structures homeless people are urged to build, preferably from salvaged materials.

• • • •

Brazil's plywood industry is growing by leaps and bounds. With imports cut off from Europe, main prewar source of plywood, ninety-eight factories have been developed and are now in operation. An additional 134 are being installed. When these are completed, the estimated monthly capacity for that country will be nearly 4,000,000 cubic feet. Before the war few, if any, factories limited their operations to the manufacture of plywood.

• • • •

Did you know there were thirty-two vessels in the United States Navy named for trees and shrubs? Probably not, for they are net tenders—and net tenders seldom make headlines. Nevertheless, here they are: *Allthorn, Balm, Bitterbush, Buckeye, Butternut, Catalpa, Chestnut, Chinaberry, Cliffrose, Corkwood, Ebony, Gum Tree, Hackberry, Hazel, Holly, Mimosa, Palm, Palo Blanco, Pinon, Royal Palm, Sandalwood, Satinleaf, Shellbark, Silverleaf, Snowbell, Spicewood, Stagbush, Teaberry, Tesota, Torchwood, Whitewood, and Yaupon.* Perhaps they are saving *Live Oak*, the most historic ship timber of them all, for one of the great battleships yet to slide down the ways.

A Baker Bulldozer on an Allis-Chalmers tractor is a formidable tool for grubbing out stumps, as various forest conservationists have found out. A Baker and one man can do the work of a gang with axes, spades, chains and pullers.

In addition, the Baker dozes trees up to 10 or 12 inches in diameter, piles brush, cuts fire blocks, builds roads, earth fills and dams for impounding water and cleans glutted streams.

There are endless jobs for Bakers in national parks, reforestation nurseries, state parks, arboretums and game preserves. The Baker's powerful, hydraulic down pressure on the blade and fast direct lift get earth-moving and grubbing jobs done faster. Simple in design, with a minimum of parts, Bakers are logically easier to maintain.

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BULLDOZERS SNOW PLOWS **BAKER** CONSTRUCTION EQUIPMENT

"INVASION" TRAVEL . . .

UP TO 1942, friendly June skies witnessed the beginning of the greatest pilgrimage on earth, the movement of millions of Americans to their chosen summer vacationland. No other people, as a whole, enjoyed such leisure, nor so many opportunities to spend it in health-giving outdoor recreation.

City-bound New Yorkers rode luxurious tourist trains to marvel on the rim of the Grand Canyon. Californians paddled canoes in the Minnesota lake country, or motored over New Hampshire's birch-lined highways. Sport-loving Virginians took to the air to fish in the national forest back country of Idaho or Montana. Texans parked their trailers in Blue Ridge Mountain groves. Everywhere campers, hikers and picnickers, millions strong, turned to their outdoor heritage for a day, a week, or a month of relaxation and sport.

During the first two years of war vacation travel diminished, but did not disappear. Gasoline rationing grounded the motorist, but our busy transportation system was still able to accommodate many seeking rest and relaxation. This summer, however, the situation is different. It is invasion year, and our transportation facilities must be free to respond to all demands made upon them, especially the movement of American casualties inland from Atlantic ports where they are likely to be delivered direct from the beachheads. Under this circumstance any unessential travel is not in the best interest of the country.

The American Forestry Association is doing its bit in helping to meet the situation by abandoning its 1944 wilderness Trail Rider trips, by encouraging its members and others to find relaxation at home, in their gardens, by week-end hikes in woodlands close at hand, or a day fishing in nearby waters—there are numerous opportunities right at your own doorstep.

After Victory the wilderness trail will still beckon; highways will still lead to your favorite national park; fish will still strike in national forest lakes and streams; and the groves and vistas and sunsets will be all the more alluring. But this year we must achieve that Victory!

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Here's One Underground Movement You Can Support!

AFTER Hitler and Tojo are safely locked up in padded cells, America will have a chance to catch up on much needed construction work—new highways, new homes, new airports, the conversion of war plants to peace-time production and forest conservation work.

The underground movement will be tremendous—there'll be need for more trench than it would take to reach from here to Hell and gone. Not least among these jobs are the vast drainage and soil conservation projects to be done in America's timber reserves. There's a Buckeye rotary digging wheel and ladder type trencher for every forest service requirement.

Buckeyes are available under priority regulations—do your postwar planning now—send for Trencher Catalog.

P E A C E
WILL BRING NEW CONCEPTS IN TRENCHING

The Air Age, ushered in by the war, calls for burial of much of the electric and telephone wire and cable formerly strung on poles—advanced methods in herringbone and lateral subgrade drainage of highways to protect the surface material—drainage to prevent soil erosion and to reclaim land—gas and city water made available to more homes—these are a few of the future trenching jobs awaiting Buckeyes.

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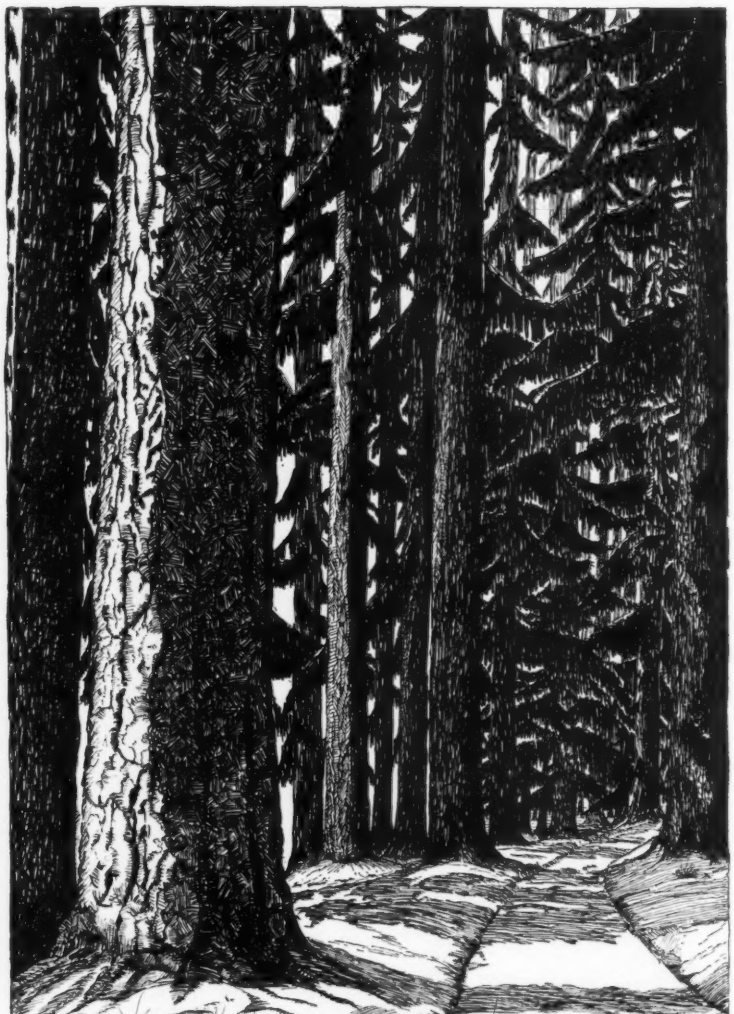


THE FOREST

By H. B. HINMAN

I worshiped in the shadows of the wood,
Where giant trunks, in stately columns stood
Like fluted pillars, carved by hand in stone.
Where interlacing bough-made ceiling gave
A dim and vaulted dome above the nave.

The early morning zephyrs gently swayed
The tree tops, while the softest music played,
That sifted through the incense scented air.
And worship in the temples man had made,
Seemed futile here within this forest glade.

I saw the forest when the cloud-bursts poured
Their torrents on the earth. When thunder roared,
And vivid lightning pierced the darkened sky.
When trees swayed violently; their branches clashed,
And mighty giants of the forest crashed.

For one who knows the forest's every mood,
With all her hidden secrets understood,
She plays the most delightful symphonies.
What varied scenes upon the stage appear,
That ever change, throughout the changing year!

Editorial

WOOD IN INTERNATIONAL POSTWAR PLANNING

PRESENT information justifies the prediction that world needs for wood will reach an all-time high during the years immediately following the war. In this country, war restrictions on civilian and non-military uses of lumber are building up a tremendous postwar demand. The volume grows with every month the war continues. Even more critical will be the need for wood by England and by many European nations ravished by war. Rehabilitation of these countries, it seems safe to say, will call for wood in amounts beyond anything heretofore known in world history.

Recently, after a visit to England, C. P. Winslow, director of the U. S. Forest Products Laboratory, raised the pertinent question of where the wood needed for postwar reconstruction will come from. The British wood situation, he found, will be extremely grave. The Isles long have been dependent on importations, obtaining ninety to ninety-five percent of lumber requirements from other countries. War has greatly reduced these importations, and to meet critical needs England has increased domestic production of lumber some eight times. The result is that England, figuratively speaking, is draining its limited forest resources almost to the last stick. "After the war and for many years," Mr. Winslow states, "England will have to import practically all of its lumber."

Britain's reconstruction program, according to estimates given Mr. Winslow, will require four to six billion board feet of softwood lumber a year for a decade. Practically all of this must be obtained from sources outside the country. But from where?

Reports Mr. Winslow, "Opinions were expressed to the effect that Sweden, which furnished nineteen percent of the 1938 imports of softwood lumber, has not depleted its forests during the war and could probably continue to furnish this amount; that Finland, which furnished twenty-four percent, might, depending upon its relationship with Russia, continue to supply this amount; and that no prediction was possible regarding Russia, which furnished eighteen percent. While Russia has large supplies, it will have great internal needs of its own, and may require also much of Finland's production; further, much of the Russian supply is rather inaccessible."

Weighing the possibilities of importations from Sweden, Finland and Russia, and also from Canada, England still will be short 2,000,000,000 to 4,000,000,000 feet of softwood lumber — an amount which may have to be made up by the United States if England's reconstruction needs are met. "The situation is further aggravated," Mr. Winslow continues, "by the fact that practically all of the European countries will require to an unknown and varying degree lumber and wood in various forms. Including Germany, their forest stands have been overcut and devastated.

"Even if postwar rehabilitation should be aimed primarily at assisting these unfortunate countries only sufficient to house, clothe, and feed them, it must be remembered that much of their normal work has been in the manufacture of wood products, and such labor cannot be resumed unless wood to work with is provided. Hence it would seem likely that the United States and Canada, as well as Central and South American and African countries, will find it both necessary and desirable to supply the quantities necessary for these purposes."

Clearly the availability of raw wood for lumber and other forest products is a factor of great moment in postwar reconstruction. Wood needs now arising will have a direct bearing not only upon the reestablishment of the social and economic life of nations but these same needs may well confront the United States with the gravest threat in its history to the orderly conservation and management of its forest resources. Such a possibility is inherent in a runaway world market for timber. Progressively, events are setting the stage for such an eventuality. Sawmills do not have to reconvert for peacetime operations. The only sparks needed to set them off to an unrestrained orgy of timber cutting when the war is over—and this is particularly true of the small, roving, irresponsible mills—are market demands and a plentiful supply of labor, both of which it now appears will be abundantly available.

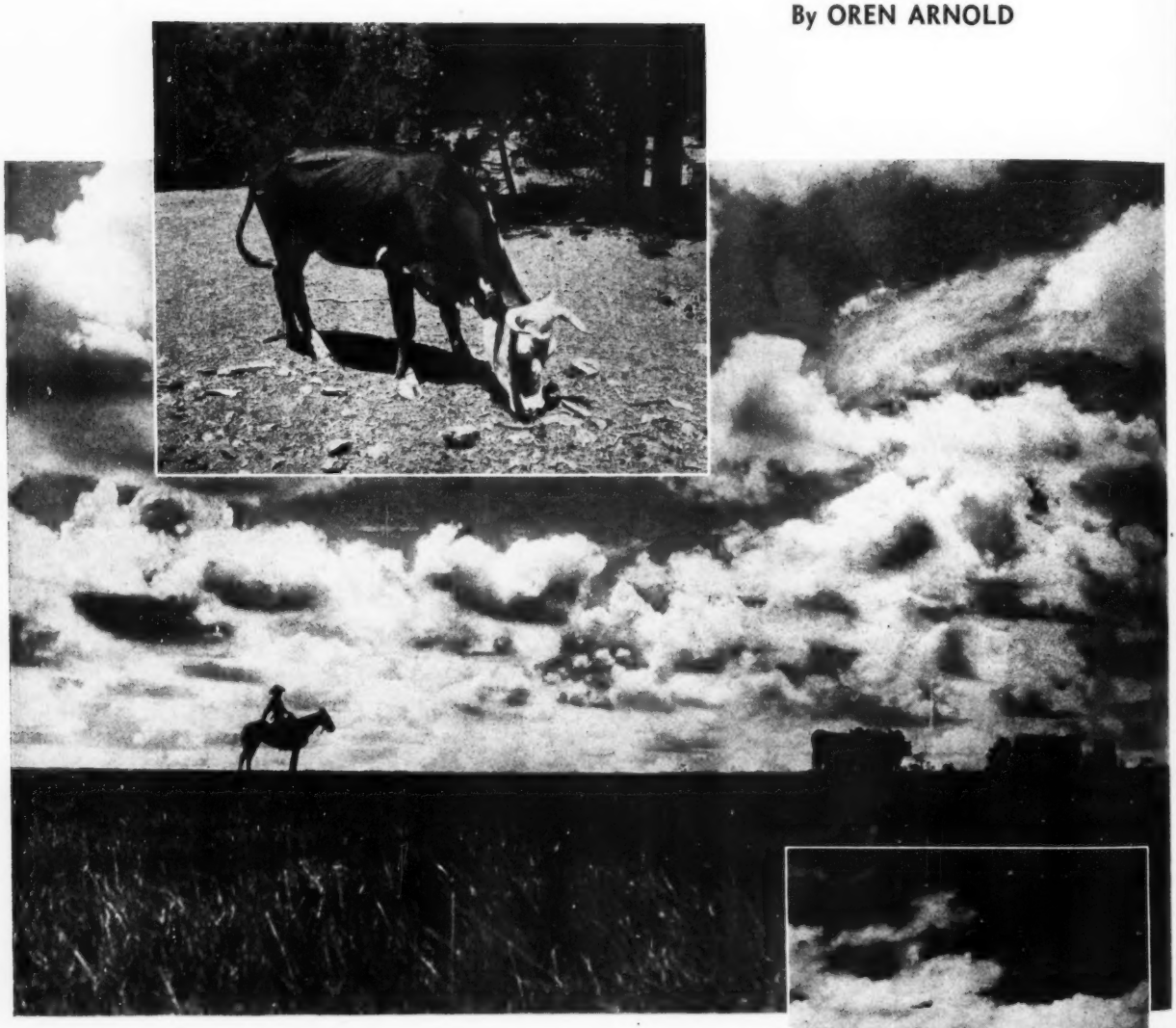
In connection with postwar lumber requirements of England and the European countries and the extent to which the United States may help meet them, while at the same time supplying its domestic needs without depleting its forests, Mr. Winslow raises the timely question of what is being done in postwar planning to deal intelligently with the situation. It is pointed out that while there are active inter-Allied committees on the problems of future needs and supplies of food and other basic materials such as steel and aluminum, there is no joint agency responsible for action on similar problems of international wood supplies.

In view of the importance and complexities of the situation, Mr. Winslow believes that an inter-Allied committee should be established "to come to grips with the problems of determining both for the postwar and occupational periods, (a) the needs of the United Kingdom and European countries for lumber and all other wood products, and (b) to what degree the United States and other countries can supply them." He would have the committee also go into such questions as to how the wood supplies involved are to be financed through international exchange, and he would have it given responsibility for securing action in addition to supplying information.

The proposal, we think, is well supported by all postwar interests—international relationships, human and economic reconstruction of war-wrecked nations, and our own self-interest in the future protection and conservation of our forest resources. The American Forestry Association through its Forest Resource Appraisal is now undertaking a down-to-date inventory of forest supplies and conditions in the United States as a basis for sound and wise handling of our forests in the postwar era. But in dealing with the world timber situation, as we will surely have to, the larger picture of the international forest situation will be indispensable.

EMERGENCY IN GRASS!

By OREN ARNOLD



The greatness of America is linked with her picturesque cattle empire—an empire today struggling under the effects of a half century of grass depletion. Cattlemen cannot stay in business, nor Americans enjoy a plentiful supply of red meat, with undernourished animals like the one shown in insert. Nor can cattle thrive on wildflowers and scenery, as at right. The hope is in restoring the rangeland to the nutritious grasses, as above

AMERICANS today are experiencing more than a hint of meatlessness—and they don't like it. This is due not altogether to OPA, as some will argue, but partly to an unprecedented demand for meat for military and lend lease needs, and partly to an emergency in grass.

This emergency did not begin with Pearl Harbor and it is quite apart from any war, although apparently a war was necessary to shock us awake. It stems from a terrific even though unintentional error on our grass frontier.

The trouble began when grandpappy in buckskins drove his first bull and heifers onto the vast western ranges, stood up in his stirrups and exclaimed with glee, "Good Lordamighty, just look at that grass!"

now in 1944 *his* son is in charge, and this third generation has to stop and scratch its head.

Where is the belly-deep grass of yesteryear? Why must I own or lease twenty-five to 150 acres for each one of my steers? Why is the game scarce, and the topsoil eroding away, and the once lush range now covered with useless sotol and cactus and snakeweed? I am not making any money even with beef prices high, because it costs me so much to produce my cattle.

That is his cry of despair and heretofore he has seen only one answer—to crowd more and more cattle on his thin grassland, then pray for rain.

Suppose it does rain. Three to six weeks later—"Ranges are greener than

squarely between the eyes, even though you dwell in a penthouse eighty stories above Broadway. It means that your entrées may be the limpid white flesh of fish and fowl unless something is done to insure rich red T-bones. It means an incalculable effect on national health and economy. It means a lowering of our standard of eating far below that which the war has brought. The purely agricultural nations have never achieved real prosperity and leadership —as witness China—and the superlative greatness of America is linked inescapably with her picturesque cattle empire. The hope is that we may be realizing this before it is too late.

Unfortunately, the cattle rancher has been the most confused person of all. He

On the trail to better feed range. Ninety percent of the nutritional grasses have been overgrazed—and will continue to be until herds are reduced. The grass can—and will—come back if given a chance

The black and blue grama, the sideoats, the hairy, all the other staunch perennials and the many fine annuals as well, were a sea of luscious nourishment up to the animals' chins. A steer could get lazy fat on a half acre. Top soil was thick. Wild game abounded. Grandpappy thought he had found an earthly paradise, and he had!

Unfortunately, the old boy lacked foresight. He was too profligate, too typically American. He nursed his heifers and brought in more. He unlimbered his guns and drove savages away and built herds until his cattle numbered into the hundreds of thousands, and when they ate all the grass and browse in one valley he simply moved them to the next. His son honored him for it and emulated him—but

at any time in the past six months," the Phoenix *Gazette*, the El Paso *Times* and other western papers will tell us. "Grass has been restored in practically every section of the state, with good promise for fat steers and yearlings."

But it isn't so! The range is green, right enough, but only with quick-growth weeds, flowers, and tender little dainties with no nourishment worth speaking of. Esthetically, the semi-desert areas and the mountains are a visual paradise again; but cattle cannot live on beauty.

The cold, hard fact of the matter is, nutritious grasses have been depleted over a period of about fifty years, and cannot be restored without at least a decade of careful nursing.

What's more, that fact hits you

is not unpatriotic. He is no more selfish than the average citizen. His son is at war just like the banker's and the manufacturer's, and he, too, yearns for a sound national economy after the victory parade. What's more, he will sacrifice heavily to insure that soundness, once he sees clearly what path to take. For twenty years he has known that the range grass was dwindling, but he has clung to the philosophy that something surely will work out for better in the future—it is America's worst fault, that reckless optimism. He has been willing to sit at the conference table at Phoenix and vote "Aye, we've got to guard our natural resources and protect our rangelands." But, back in his saddle, he hasn't known precisely what to do. Arbitrary cutting down of herds (often by

as much as fifty percent) as recommended by government range authorities, has seemed to him a sure road to bankruptcy. Occasionally he has become a die-hard who openly resented government "interference," and sensation writers erroneously pictured a situation akin to that between rev'nooers and moonshiners. Cattlemen are, truly, independent of mind and spirit, else they wouldn't be the saddled knights that they are. But above all they are also blessed with common sense. They don't like theories, they are practical men.

They know that society as a whole, as well as the individual, has a vested interest wherever land and natural resources

Typical condition of overgrazed range—snakeweed and sheet erosion. Few remaining live roots of grama grass could be start of restoration

are involved. They know that no man ever really owns any land; he merely leases it for the short and uncertain span of his personal life. Leasing it is a privilege, with the inevitable responsibility—and the cattlemen now realize that on this latter they have unintentionally been falling down.

The recognized truth today is that an estimated ninety percent of our nutritional grasses have been overgrazed to the lowest possible point. First problem, then, is to determine how many cattle can be put on a known acreage and still allow the grass to come back. This becomes a regional matter; no general rule can apply.

Specific decisions are left to neutral authorities—the range management officials, the national forest supervisors, the state land commissions. These latter are virtually dormant, with some good exceptions, and maintain—as in Arizona notoriously—a do-nothing policy toward restoring the range. In Arizona, indeed, land commissioners' reports contain nothing that even admits a grass problem exists! This despite the fact that conservation groups, the Arizona Education Association of 4,000 school teachers and executives, the chambers of commerce, the women's clubs, and other spirited organizations and individuals, rate it as a Number One problem. The commissioners' lack is furtherest offset, however, by the fact that F. Lee Kirby, supervisor of the 2,411,000-acre Tonto National Forest and its vast grazing lands, is perhaps the nation's Number One crusader for grass restoration. Apparently the entire program of range management must stem from the people through Washington rather than through state capitals, in order to avoid political pitfalls.

Arizona and its Tonto forest are, in truth, excellent proving grounds, not only in theory but in actual tests. This is not the largest nor the smallest cattle state but perhaps is the most typical; it has infinitely varied terrain and climate, embodies most of the conditions that exist elsewhere. Lee Kirby and others there have proven conclusively that rich lush range grasses can be restored, without stifling the cattleman while about it. Theirs is the hope of the industry.

As early as 1927 these government men began fencing off test plots. Since then a total of ten have been fenced in Arizona. One is as small as an acre, but others have from seventeen to 300 acres. Fences are well made of barbed wire so that absolutely no range stock can get on the plots except under official control for studying. Locations are widely scattered—on arid semi-desert, on medium altitude slopes, on high mountain plateaus, on open lands, in forests.

No extra help is given nature in these plots. Even the deer and the elk and the antelope jump the fences, and of course Bre'r Rabbit and the smaller rodents all come in. But you can go stand by the wire yourself and see graphic contrast. One side of the fence will show side-oats, black, blue and hairy grama or some combination of these and other fine grasses, growing back to the luxury they presented when grandpappy first arrived. But the other side of the fence will show alarming sheet erosion, because the land is sandpapered clean by the tongues of too many cows.

That significant demonstration is something that any rancher, even the die-hard, can "get his teeth into"; it is not just a paper project any more. A city resident feels the dramatic sense of promise when he watches men of the saddle ride up to that fence, say very little about the contrast, but just sit and stare. And the promise is heightened immeasurably, the argument for restoration given a clincher, when the story of the Cavness ranch is told. The Cavness record—downright exciting—is released with official sanction here for the first time.

Tom Cavness of Arizona, was one of the comparatively few ranchers who elected to cooperate with the Forest Service and other government agents all along, taking the long-range view of the matter, accepting initial financial losses when necessary and gambling on ultimate profit. He actually began private grass control on his 57-Ranch near Bloody Basin thirty-eight years ago. And listen—

In one recent eight-year test period, Cavness cattle on land where restricted grazing had been practiced showed a calf drop (i.e. birth of calves) of better than eighty percent! On a neighboring ranch with identical conditions except for unrestricted grazing, the calf drop was only forty-six percent. What's more, Cavness stock at yearling age averaged 109 pounds heavier an animal, because of the additional grass!

This is powerful evidence on the hoof rather than out of a government bulletin. Moreover, it is backed by similar experience on some other ranches, notably that of A. T. Vaughn and Mark Twain Clemens. Vaughn's record crowds that of Cavness in being sensational. Clemens, nephew of the great humorist, entered the field only in 1939, with a voluntary policy of fifty to fifty-nine percent non-use of his grazing land. Already he is finding it profitable. Na-

ture, given half a chance, always smiles back at man.

The fenced test plots make no appreciable improvement during their first year. Second and third years, results begin to show. The leafed runner of the curly mesquite grass, for instance, will shoot up, fall over from its own weight, and where the joint touches—take new root! Next season there is a brand new tuft. Successful spreading requires two favorable growing seasons, one for the new plant to get started and one more for it to become firmly established as an individual. Then the new plant really begins to "go to town." It is ready to beget children of its own. Tufts become veritable islands on the denuded earth. The original parent plant—no longer cropped every few days, no longer trampled by hoofs—may shoot up twenty seed stems at first, then next season or next, each of those new plants raises a family.

Among the famous grama grasses, side-oats is the most picturesque. It starts very humbly, but once a basal leafage is grown and a plant vigor established, it too leaps. Ultimate growth, (by actual count) may show 400 or more seed stems—heaven for any horse or cow. Frequently it is aided at the start by the noxious prickly pear and weeds, which do hold some of the fertile topsoil and guard the infant grass from cattle, but as the grama grows it starves out these plants to make an almost perfect grazing range. All of this takes time, however; two years, or three, more often as many as ten to fifteen and in the extreme, thirty years.

One great blessing is that grandpappy's grandsons need not remove *all* their stock from any given range in order to restore the grasses. Lee Kirby and his coworkers stress this.

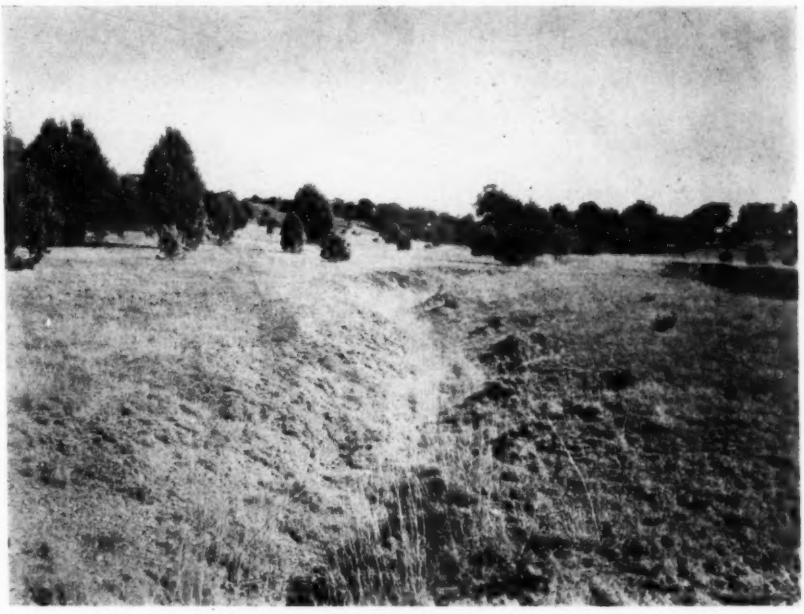
"Partial reduction of the animal population is all that we usually ask," Kirby says. "Main thing is that twenty-five to fifty percent of the average annual growth of the grasses be left on the ground each season. Similar control must be given our browse plants such as mahogany and cliff rose. After that, with controlled stocking, we should never be caught in an emergency like this again.

"The threat in our cattle region is comparable to what happened to the forests in the Great Lakes country and in the South. There, as most earnest Americans now know, 77,000,000 acres have been tax delinquent for years and are non-productive, due to destructive forest cutting. Similar wastage has occurred in the Pacific Northwest. In Arizona, New Mexico, parts of Texas and Utah are 100,000,000 acres that have been critically overgrazed, and some other states are even worse. Sheet erosion has taken off topsoil dating back 500 years, because when grasses are eaten to death there is little left to hold the soil. This is not as spectacular as the great gully-type erosions or as forest fires—I wish it were, because it would command more attention. But it is more insidious and far more destructive.

"We who have seen its progress have been sadly discouraged at times because nobody would heed our warnings. We were called alarmists, fanatics, crackpots. Until recent years we couldn't *show* what we knew to anybody, except technicians or persons trained in this work. The test plots, though, have given us a powerful new weapon. We have taken courage anew.

"The whole problem, therefore, now resolves into one of human relations rather than agronomy or other science. The technical facts are known; the people themselves must be educated. Our great hope and purpose is to enlist the support of the rancher."

Pictured here is the vital story. Cattle graze unrestricted on one side of the fence—on the other only under official restriction and check



Another test plot, showing not only how good grasses return under controlled grazing, but also how they check and heal eroding gullies

BRITAIN'S POSTWAR "NATIONAL PARKS"

By ARTHUR NETTLETON

To preserve such natural beauty as the Watendlath Beck near Keswick, the people of Great Britain are looking to postwar "national parks"

ENGAGING the attention of British politicians and the general public alike, as part of Britain's postwar reconstruction plans, are projects to establish national parks in the United Kingdom. So far, Britain has no tracts which may be regarded as fully within that category, though some woodland retreats of considerable extent, such as London's Epping Forest, are owned by civic authorities.

The much wider postwar schemes aim at preserving, and opening up for recreational use, some of the most beautiful parts of the English countryside. Naturally, Britain's woodlands figure largely in the plans. The British conception of a national park for recreation does not indicate national forestry parks—areas reserved primarily for forestry, though a number of these already exist and are being progressively added to, and some of them may serve as recreational retreats. The postwar national parks which are the subject of wide discussion are regions which it is hoped to preserve against spoliation and commercial exploitation, and which if the schemes mature will be provided with suitable camping sites and hostels.

Various national and local organizations are actively interested in the projects. Supporters include organizations for cyclists, hikers, campers and other outdoor folk. Bodies concerned with the preservation of rural amenities and country footpaths are similarly giving close attention to the national parks question. The Councils for the Preservation of Rural England and Wales have had a standing committee to consider these matters for several years, and more recently the collateral organization for Scotland formed a similar committee.

Government interest, too, is keen. As far back as 1931, a government committee issued an official report in favor of establishing national parks in England, Scotland and Wales. That recommendation failed to bear fruit because the national financial crisis ensued almost immediately. Postwar reconstruction, however, is now widely regarded as offering an opportunity to put the postponed projects into effect. The plans for a better Britain, it is urged, should include enhanced facilities for outdoor, healthful recreation. It is stressed that the cost entailed in providing national playgrounds would be well repaid, as the health of the nation would benefit.

It is further emphasized that, with the expansion of travel facilities during the last twenty-five years, the cities and towns have extended further and further into the rural areas, with consequent injury to many beautiful regions. No longer is it essential for city workers to live near their place of employment, and ugly dwellings and housing estates have already marred more lovely tracts than can be spared.

The national parks schemes aim at turning this trend to more beneficial results—first, by curbing the spoliation, and secondly, by utilizing the travel facilities as a means whereby city and townsfolk may enjoy the preserved regions.

Foremost among the areas suggested as future national playgrounds is the English Lake District of Cumberland, Westmorland and northwest Lancashire. Not only is this region the most beautiful in Britain, but it offers opportunities for a wide variety of healthy outdoor pursuits.

Its fifteen lakes provide fishing and boating; its peaks include the highest in England, and give excellent scope for both easy and hazardous mountaineering. Its fine woodlands, country roads and footpaths are great attractions to the hiker, cyclist, rider and camper. The entrancing views, ranging from bits of woodland to extensive panoramas, have no better in the whole of the United Kingdom.

America can claim to have had some indirect influence upon the choice of the English Lake District as a national playground. British hopes of this area shortly being scheduled as a national park are increased by the fact that already a considerable part of the region is preserved as a national heritage, by that well-known but often misunderstood body, the National Trust.

In National Trust custody at the present time are more than 15,000 acres of lakeland; a further 15,000 acres are protected by that body against spoliation, this extra area being the subject of restrictive covenants. The properties include many woodland tracts and viewpoints, as well as such treasures as the house where the poet Wordsworth was born.

But the National Trust is not financed by the British Government, its funds being obtained from subscriptions, benefactions and legacies. It has received financial help from the Pilgrim Trust, established by the American millionaire, E. S. Harkness.

The existence of further extensive National Trust properties in the Pembrokeshire coastal district of South Wales gives this region a high place in the list of Britain's potential national playgrounds of the future. Pembrokeshire is the most westerly county in Wales, and is easily accessible from the industrial districts of South Wales. But it includes magnificent coastal scenery, and much of it came to the British nation in 1939 as a result of substantial help from the Pilgrim Trust.

But Britain is by no means relying entirely upon National Trust properties to provide the national playgrounds of tomorrow. Other districts, where Trust-preserved tracts are few or nonexistent, have been officially recommended as worth scheduling as national parks. Parliament has been urged to preserve a big area in North Lancashire for that purpose. Contrary to widespread belief, big regions of unspoiled country exist in that otherwise industrial county. The old royal demesne, the Forest of Bowland, lies in Lancashire, and covers more than 200 square miles.

Although much of the old forest has been cut down, the district is still completely rural, unmarred by towns and commercially unexploited. It is a region of fells and wild grandeur, with a number of woodlands still remaining in

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Not the Colorado Rockies—but Honister Pass in the famous Lake District of England, foremost "national park" candidate. Its mountains, lakes and woodslands are already protected by the National Trust

FISHING IS ESSENTIAL

By CHARLES ELLIOTT

THE shadows were growing long when I arrived at the Blue Hole. The sun had slanted toward the western rim of Cohutta Mountain and the big pool had darkened from emerald to turquoise blue.

Blue Hole was where my day would end. The two prongs of Jack River met there, one out of the long valley that paralleled the road up to the game warden station, the other off the precipitous slopes of the main range. This was one of my favorite spots of the Blue Ridge, partly because of the cathedral beauty of the place, partly because of the big rainbow trout that occasionally moved out of the depths to look over my offering of feathers and steel.

Twice he had taken my serving of artificial flies. The first time he calmly reeled line through the guides of my rod and snarled the leader in the roots of a submerged tree. The second time he somehow managed to eject the hook from his tender mouth.

Approaching the pool through knee-deep water, I maneuvered for a position from which I could lay my fly where the current curled between the overhanging bank and a fallen tree. But I never had the chance. Someone was at the pool ahead of me, standing in the shadows that darkened the stream. He was fishing down the current with a cane pole and a long black line. I moved to where I could see him better. He was built like an inverted boat paddle and wore blue denim overalls. When he moved to cast again I recognized one of my mountain neighbors, Pate Jones.

I sloshed out of the creek and made a wide circle around the pool to where he stood. "What luck?" I asked.

He grinned broadly from under his battered black hat. "I ain't doin' no good, Chairlie," he said. "Been tryin' five y'ar to ketch this ole trout. What he eats, I ain't never found out. It ain't worms, or grasshoppers, or beetles, or bread. It ain't spring lizards or minnows. He's thumbed his tail at me twicet, though. Here, you try him."

I declined the offer of his cane pole and sat down on the edge of a boulder to watch. "I didn't know you were a fisherman, Pate," I said.

"Man's got to have his play," he replied. "Some take it likker drinkin', some a-courtin', some with other foolishness. Me! I take mine fishin'."

After a day on the stream, says the author, you can tackle tomorrow's job with the assurance that comes only from internal peace. This is why fifteen million Americans in normal years spend millions of dollars to fish

"How old are you, Pate?" I asked.

"Somewhere around eighty-five, I reckin."

I grinned. "What other sin can you commit besides fishing?"

Pate raked his black hat back and scratched at his touseled mop. "Wal now," he said, "I'm a right smart better man than you might think, maybe. But I'll tell you this. In my life I've made a million gallons o' likker and never drunk a drop. I've raised a mite of terbaccy and never smoked a puff, and I ain't never been no hand with the gals. But I ben tryin' to outwit the ole trout in this river fer seventy y'ar or more. That's been my play."

As we walked down the road in the gathering gloom I tried to digest Pate's words, thought by thought. Here was a new angle. Somehow I had always been under the illusion that fishing was for city slickers like me. Pate Jones had told me inferentially that it had been a part of his very life.

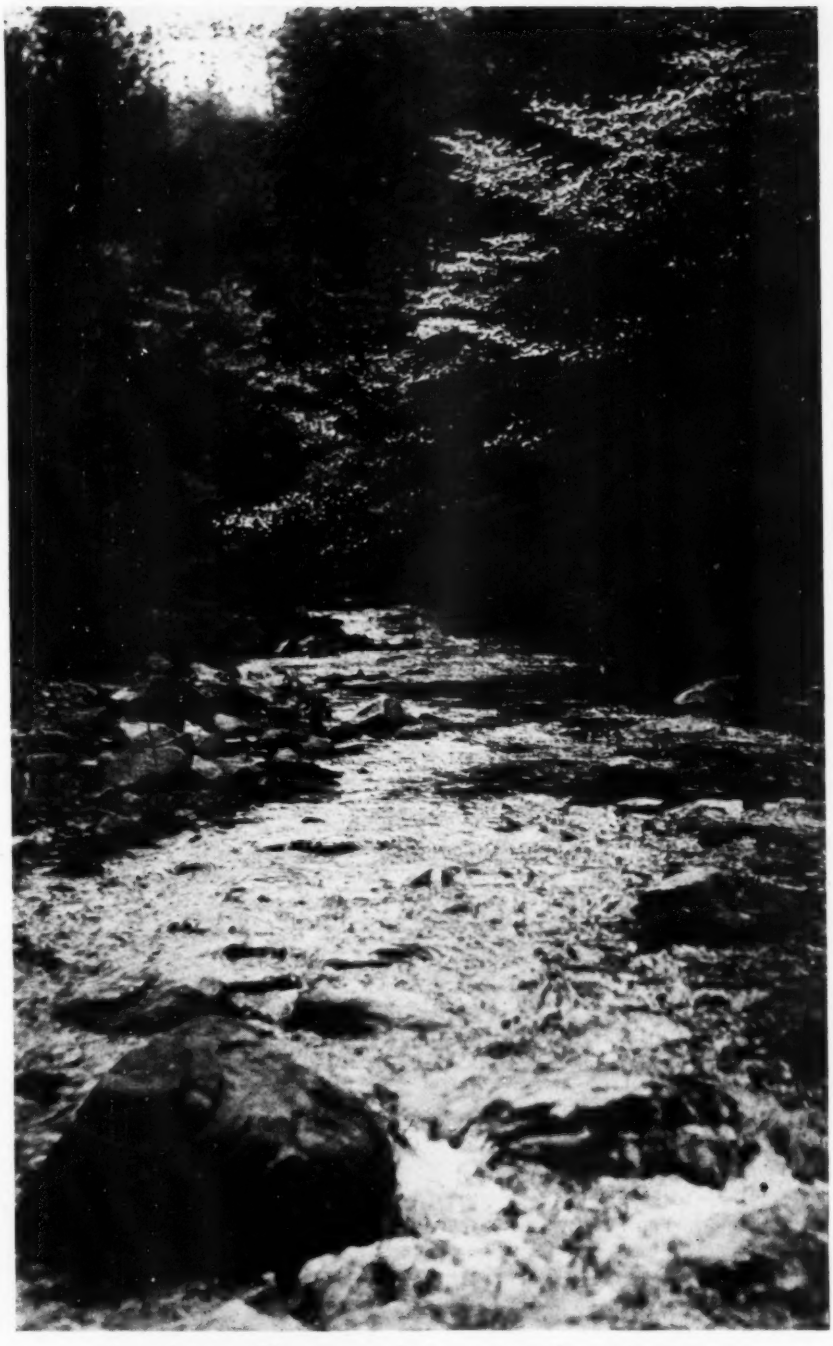
He was only one of fifteen million Americans who find recreation in fishing, who in normal times spend more money for fishing than is spent for all other sports combined.

I wondered why. I wondered if it were because America needed fish food over and above the 4,000,000,000 pounds of fish taken commercially out of its waters each year. But even as I wondered I knew I was wrong. Fishing furnished something far more vital than food for the belly of man. It provided sustenance for his moral and spiritual side as well.

We said goodbye at the forks of the trail that led up toward the yellow window of Pate's cabin, and I walked on alone in the thickening twilight.

In my own mind I listed the reasons I had for wading this trout stream when I should have been at my job, working to make the world safe for democracy again. Every reason or excuse I could think of pointed back to the one word Pate had used. This was "play." For the sake of argument, I told myself that I could have relaxed in a movie, or slammed a white golf ball from green to green. That would have been relaxation. But no argument would stack up. I knew I would not have traded that day, tired as I was, for a day at any other type of play.

I had washed my face by lantern light, in cold water that splashed away every vestige of drowsiness. By the light of that same lantern, I had lowered my anatomy to a bench before a table laden with ham and eggs, toast and honey and coffee hot off the kitchen stove. Then I had put my fly rod together and stepped into a torrent of icy water. That was the real beginning of my day.



Part of every riffle, every pool, every cast is the music of water against rocks, the wind in the trees, the melody of singing birds

Have you ever seen the dawn from a trout stream in the hills? The stars fade and wink out, one by one. The sky changes from black to steely gray and shafts of amber and cerise sprout out of the horizon. The woods are alive. The flash of gray you see is a squirrel. If he sees you, and the chances are he will, he'll flick his tail and fling vile insults at your very presence in the woods. The first bird notes are drowsy, before they lose their uncertainty and blossom into full-throated melody. Long before you see the sun, you see its gold against the slopes and mountain tops around you. And then it breasts the ridge and glows against your frozen face and hands like the touch of life itself.

You don't look for those things. You

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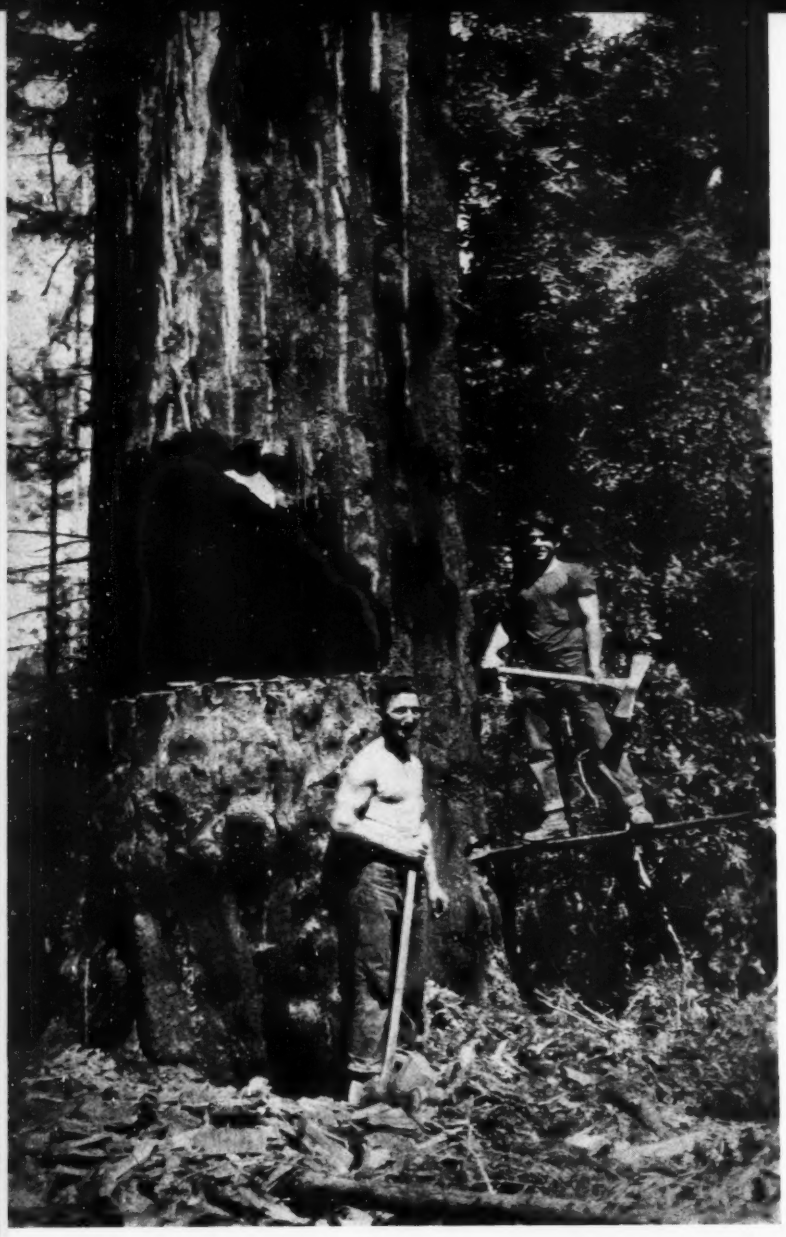


REDWOOD FORESTRY

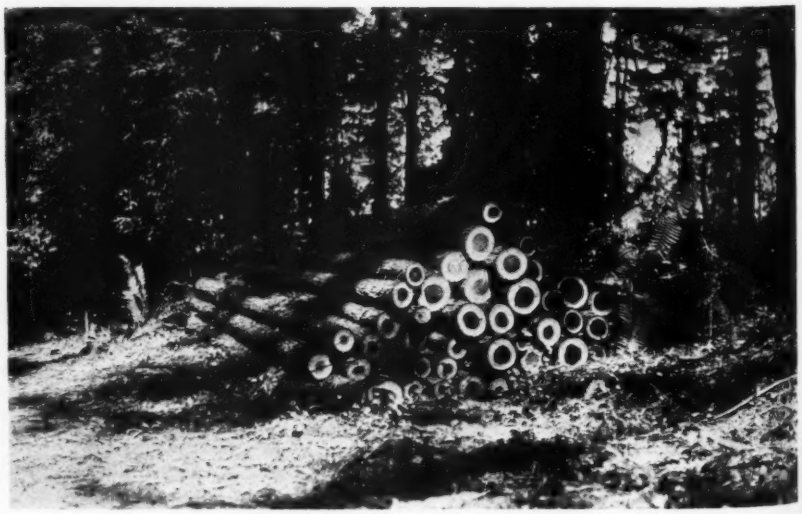
The Story of Joy Woods, First Redwood Tree Farm

By STEWART M. SNYDER

JOY WOODS is the first redwood forest in California to be put under intensive forest management. Its program calls for complete utilization in an effort to make a relatively small forest area self-supporting under continuous operation. This means the marketing of as many of the customary forest products as possible, and the finding of new uses and markets for material ordinarily wasted, such as tops and butts from sawlog and piling timber. These products are removed in accordance with a long-range plan for forest improvement, and care is taken not to impair the productivity of the land.

Covering 1,000 acres, Joy Woods lies in the Coast Range, three miles inland from the ocean near Bodega in Sonoma County, sixty miles north of San Francisco Bay. It has a rich history. Bodega is the site of the old Russian village of Kuskof, founded by the Russian Governor Kuskof in 1811. A redwood flagpole stands on a small knoll not far from the southern entrance to Joy Woods and replaces one erected by the Russians inside the Presidio of Bodega. One of the Russian trails to the north went through Joy Woods along Tannery Creek. There is an old bellows in the Joy blacksmith shop brought over from Russia by these early settlers.

Joy Woods is part of the Rancho Estero Americano acquired by Jaspar O'Farrell in 1847. O'Farrell did not work the property but leased the range land to stockmen. The timberland was later acquired by Belloc and Company,



The Joy Woods plan of intensive management calls for the removal of old growth (above) and unpromising young trees (right) to make room for the new forest

French bankers in San Francisco, who held it for nearly a decade. Timber operations were at first confined to the making of redwood split products. Stumpage was probably sold to settlers who cut the trees and split out their own rails, posts, stakes and other products.

In 1843, Captain Stephen Smith built the first steam sawmill west of the Rockies on a location one mile south of Joy Woods. This mill was the up-and-down type. He logged timber from the lower edge of Joy and from the adjoining property, originally the Smith grant.

Belloc and Company sold timber to E. T. Thurston who operated a small circular mill on the property from 1854 until 1862, when Ben and Elizabeth Joy purchased the tract and the mill. Their granddaughter, Miss Anita D. Laton of Berkeley, California, is the present owner. From the beginning of Thurston's operations to the end of the Joy operations, oxen alone were used in the skidding of logs. Five-yoke teams, sometimes seven, were used on logs dogged together end to end and pulled in tandem to a landing where they were loaded on trucks, also drawn by oxen. Logging by oxen protected standing timber in much the same manner that tractors, or "cats" as they are commonly called, do today by their mobility in getting around and between trees.

In the earlier logging, however, there was no idea of continuity of operation as we plan for it today. The oldtime loggers believed the redwoods would last forever. They selected the choice trees and left the rest—and rarely did they use more than two or three logs from a tree. Although they never clear-cut, they picked over an area more than once. Small logs produced too low a grade of lumber to be desirable when there were so many better trees to select from. So, through economic necessity, inadvertently a fine job of unconscious selective cutting was done by these early operators. No one knows how much timber was removed, as logs were not scaled. Old account books are available, but totals removed from the forest cannot be determined. Annual sales were taken as a measure. There were two grades of lumber then—"with knots" and "without knots."

Like all redwood country, Joy Woods has its ravines with steep slopes, its benches, its flats, and its plateaus. On the 800 acres of wooded land, redwood with a heavy understory of tanbark oak predominates. Douglas fir is thinly distributed throughout the area. It is possible that the fir, being less resistant to fire than redwood, was partially eliminated by two major fires which raged through parts of Joy in 1872 and 1900. California laurel and madrone are found sparsely throughout the forest.

Old growth redwood sawlogs. No sound tree is cut for sawtimber under twenty-eight inches in diameter twenty feet above the ground

There are Sitka willows in wet spots having sufficient light, while alders are found along the streams. Around 200 acres are natural grassland pastures, fenced for rotation grazing.

On the margin of the redwood belt, the timber in Joy Woods is a mixture as to size, age and quality. The stands, much lighter here than in better known parts of the redwood region, vary from 10,000 feet to about 35,000 feet an acre. While many trees are of good form and promise high future quality, a large number, mostly of small diameter, are poorly formed, limby and unpromising. The growth rate is far under the maximum possible for the site.

It is part of the Joy management policy to eliminate the unpromising and "wolf" trees, when the work can be done at a profit, and thus make possible their replacement by thrifty young trees. This practice also gives the better formed trees that are left greater opportunity for increase in growth and quality. The aim, in general, is to secure a thrifty growing stock. While tree size varies greatly, the largest redwood, on a ridge, is thirteen feet in diameter at six feet above the ground. This giant is being reserved by Miss Laton as a memorial to her uncle and aunt, Ben and Ann Joy.

There are around 300 acres of virgin timber remaining in Joy Woods. This is being logged at the rate of approximately 500,000 board feet a season. Many of the older trees are over-mature and should be removed to release younger, faster-growing stock and also to introduce a new crop. When all old-

Logs are tractor-skidded to a landing where they are loaded on trucks for the haul to the mill. Joy Woods was first logged by oxen

growth redwood has been logged off and the new crop is growing and being harvested, the rate of growth will be a factor to be considered and encouraged. Whenever there is a market for it, any tree in the forest is merchantable regardless of size and age.

a new forest starts immediately around parent stumps. Natural reproduction is depended upon to fill in openings between stumps.

Care is taken in felling sawtimber not to damage the young trees. Logs are tractor-skidded and loaded on a truck

Tanbark oak ranks second in value to redwood in Joy Woods. Its bark, utilized in the tanning of leather, is removed, the log sold for fuel

Close utilization leaves only light slash in the woods after cutting. This is burned under control, reducing the hazard of accidental fire

For sawlogs, however, no tree is cut which is not at least twenty-eight inches in diameter outside the bark at twenty feet above the ground. The twenty-foot height is used to avoid irregularities due to the characteristic buttresses. Trees under twenty-eight inches are too small to be handled economically. This leaves a sufficiently large number to insure adequate seed production for natural regeneration. Redwoods are prolific sprouters and, as soon as trees are felled, at a landing for the nine-mile haul to the mill. Cull sawlogs are worked up into split products for which there is a large local farmer market. Shakes and grape stakes are made from the straighter-grained logs and posts from the next grade. Some redwood bark is sold for decorative purposes in rustic building.

Much of the tanoak has merchantable bark and many cords are peeled during the rapid growing season in the spring and early summer when the bark slips easily. After being dried it is utilized in the tanning of leather. Ground bark is also used by fishermen at Bodega Bay for the sterilization of their nets. About a quarter of the trees peeled are "jay hawked"—that is, the bark is stripped from the standing tree. These are not felled because they are too small to work up economically into fuel, yet the bark is merchantable. Studies are being made to find out if a second crop of commercial bark can be produced on peeled trees where some cambium remains. Felled oaks are skidded to a roadway by tractors, where they are cut to fuelwood lengths. Tanoak now being cut is actually a second crop, the virgin trees having been removed several decades ago. In fact, there was a tannery at the mouth of one of the gulches in Joy Woods. This is probably the only case of utilization of second growth California tanoak.

Growth studies suggest the possibility of putting tanoak cutting on a thirty-five or forty year rotation. These trees will yield good bark and are large enough at this age to work up profitably into fuel after peeling. This would make tanoak rank second in value to redwood. With this in mind, all tanoak cutting is carried out by removing the mature and less promising trees and thinning stands that are too crowded. This allows the remaining trees to develop more rapidly.

Redwood piling and cribbing are taken from young second-growth stands under silvicultural practices designed to remove the less promising trees, always leaving thrifty stock. Reduction of competition for light and soil moisture allows the remaining trees to produce wood at an increased rate. Piling and cribbing tops and long butts are worked up into pulpwood, stepping blocks, hop stick material, and Christmas tree bases. Throughout the operation the larger limbs, hardwoods knocked down in the felling of timber, and slabs are sold for fuel. There remains in the woods little more than light slash which is burned under control. Removal of these customary waste products and the burning of slash reduces the hazards of accidental fire. Also, the forest floor is opened up, making it more conducive to natural regrowth. This type of follow-up work is as essential for good forest sanitation as it is for complete utilization.

Auxiliary products are redwood poles, redwood and huckleberry greens, ferns, burls, mossy logs and rocks, old weathered and mossy rail fencing, and Christmas trees. While these are of small financial importance, they help in a more complete utilization of the forest and yield actually a higher profit on the

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PUTTING FIRE "ON THE BEAM"

It's Done With Mirrors—but To Develop New Fire Locator, Roy Silen, Forestry Undergraduate, Had to Turn Astronomer, Metalworker and Lens Grinder

By W. F. McCULLOCH

A THIN wisp of blue smoke curled lazily upward from the south bank of Rogue River in western Oregon. A hold-over lightning fire! On Mt. Bolivar, eight miles away, was fire lookout Roy Silen, a forestry student from Oregon State College. He spotted the smoke and reported it to the ranger. A few minutes later the lookout on Hanging Rock also turned in a report. This gave a good cross shot on the fire and enabled the ranger to plot its location. With this information, smokechasers set out from headquarters.

Three days later the exasperated crew was still hunting for the fire, which was clearly visible to Silen on his lookout most of the time. It was finally located in the dead top of a live fir.

This incident was a challenge to Silen. He recognized the necessity of aiding the men who search for small, slow-burning fires which give off little smoke. In Pacific Northwest forests fires cannot be neglected, no matter how small. Every blaze must be located and extinguished with the greatest possible speed.

Silen, a native of Oregon, was aware that thousands of man-hours were lost every year in fruitless search for little fires. Eventually they would be found, but often not until they were so large that control was difficult and costly. He pondered the problem. Could anything be done to prevent or minimize this lost time and energy? Wasn't there some way lookouts could direct smokechasers to a fire? Radio would help, of course, but was ineffective whenever a smokechaser was unable to identify his position in the deep woods. The compass was frequently unreliable because of misleading local attraction, or because vegetation obscured a sight back on the lookout. What about a mirror flash? It could be seen for thirty miles or more, and the bright spot could be picked up through openings in trees even where it was impossible to get a compass bearing.

Silen had made a hobby of astronomy. He knew that astronomical telescopes were rotated by motors so as to follow a star continuously as it moved across the heavens. With this background he drew plans for a mirror device run by a clock, which would keep a spot of reflected sunlight fixed on a given point, despite the movement of the sun. The mirror flash would provide a constant direction line from the lookout to the fire, similar to the radio direction beam used by airlines. To limit the area

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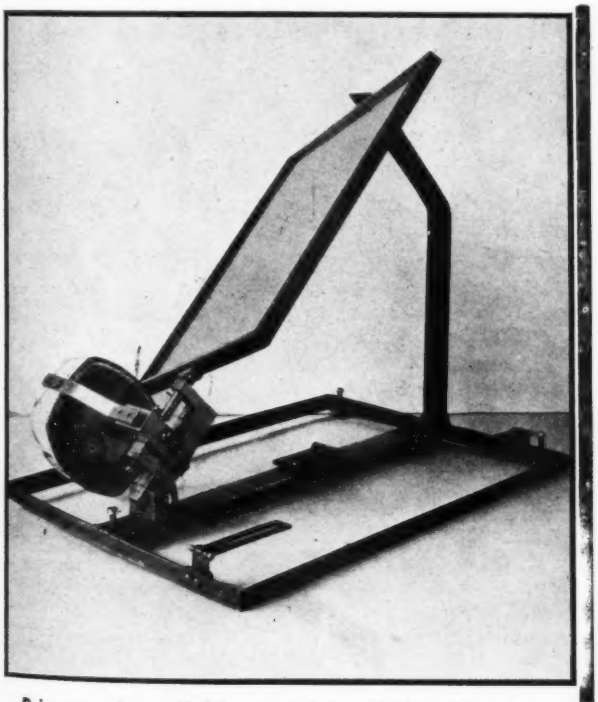


Primary mirror (left), turned by clockwork motor, moves with the sun reflecting beam of light constantly on secondary mirror (right), which pinpoints it on fire. Smokechasers, "on the beam" locate fire quickly, save valuable time

NONE THAN A TREE THAT PUTTETH FORTH LEAVES

By C. BROOKE WORTH

1

None than a tree that putteth forth leaves is the subject of my discourse.

2

A tree springeth not from the soil. Rather is it transported from the Sun on wings of light. Look thou carefully as thou canst, thou shalt find no mud in its leaves.

3

A tree hoardeth the Sun's largess. No one shall pilfer that store without returning the wood to air and water.

4

See! How the sun bursts from the charred wood! A man is warming his feet and heart.

5

A tree is a giant, a legend, a symbol, a skeleton, an eye-beam, a lath, a merry-go-round, a father, a nursery, an aviary, a chief being, an appendage, a haven and a gibbet. All these things is a tree, and more.

6

But mind! Manifestly a tree is none of these things. It is a tree.

7

A tree that was old harbored bats in its hollow branches and a fungus at its heart. In Spring it put forth blossoms.

8

Yea, that tree endowed its flesh with grubs, that all the woodpeckers blessed it. But it soon fell.

9

A tree of soft wood maketh a show of its flowers. (Wouldst not thou if thy days were short?)

10

A tree speaketh not to a man. But to the wind it gossipeth freely of its concerns.

11

The wind is but an adjunct to man's purposes. But look—it is a tree's confessor.

12

What wouldst thou of the wind? To carry thy longing to another? Then study the ways of trees.

13

Lo! I have studied the Everything of trees. I have passed the Sentinel Worm at the Roots and paddled through Sap to the tallest Leaf. Regiments of future trees swarmed with me in the Sap.

14

Deliver me from the man without branches. He hath too sharp a thrust with his thin head.

15

A tree that looseth its lower branches, that they fall to the ground, arriveth at a thin-headed pinnacle, apart from grace.

16

There be trees that grow in difficult places. Their growth is small, but their wood is sound.

17

Wide branches distribute acorns to good advantage. The narrow oak is consumed by its own progeny.

18

The more succulent the fruit, the wider doth it split open when it striketh the ground. But look ye! It is not from the pulp that new plants spring.

19

Thou art like a young tree. I strike thee with a hoary cudgel, and Sap springeth like tears from thy green and tender bark.

20

My bark is thick and cut up in geometric wrinkles. But I bear a million leaves more than thou.

21

How canst thou survive so frail? I think that I have never been young.

22

None than a tree that putteth forth leaves shall shelter me. I stand among spectre-stumps in a waste forest.

23

That a tree should walk is fancy. That it should roar and crackle against the forest fire is noble. What man, weakened by legs, hath pluck to stand in a burning house and rage against his own destruction?

24

The fire hath laid the forest in embers. Behold! A century later the forest again standeth. Hath it, then, been burned at all?

Typical geological formation in the Glen is "Pompey's Pillar"

A Forest for a Laboratory

Antioch College Dedicates Famous Woodland Glen to Encourage the Spirit of Research

By DOROTHY HALL SMITH

WHEN, a little more than a year ago, Antioch College at Yellow Springs, Ohio, received a half million dollar endowment for its 930-acre woodland, Glen Helen, the foundation was laid for what one day may become the finest outdoor laboratory for biological and geolgical study in the state. The endowment was a gift of the late Hugh Taylor Birch, an alumnus, who had previously given the college Glen Helen in memory of his daughter.

The Glen, adjoining Bryan State Park, is no ordinary place. A small stream and its tributary have cut eighty to a hundred-foot gorges through the limestone. The rocky sides of the little valley, but a third of a mile wide, are covered with native trees and shrubs (104 varieties of woody plants are found in the adjoining state park); more than 300 kinds of flowers and flowering weeds grow there; and 190 species of birds, resident and migrant, have been reported. With its seasonal parade of birds and flowers, its small artificial lake, springs and 250-year-old oaks, its cascades, rocky walls, glacial boulders and miles of twisting paths, the Glen has been noted for its beauty well over 100 years, and is a pleasure ground of great natural potentialities.

Geologically it is a resumé of a whole region. Ohio is one of the older parts of the United States; the sedimentary rocks were laid down in the warm seas of the Silurian period millions of years ago. The streams in the Glen have neatly sectioned through successive deposits, so that at least five distinct layers are revealed, each documented with fossils. The oldest and lowest is the Brassfield limestone; above, in order, lie the Dayton limestone, Osgood shale, and Springfield dolomite, with the local Cedarville limestone (or dolomite) on top.

These layers vary in hardness, so that in addition to the huge limestone blocks broken off the sides of the cliffs, the Glen has "pulpit rocks" and "pillars" where the weaker rock is capped by a more resistant shield. The cascades occur where a hard rock overlies a softer one and the water has cut out a great bowl below.

The most famous feature of the Glen is the "yellow spring" from which the village takes its name. There are springs, of course, all through this limestone country; the "yellow" (chalybeate, not sulfur) spring is distinguished by its size and constancy of flow, which for at least a century has been 100 gallons a minute, its constant temperature, and its unexplained high iron content in a region where almost no iron occurs. Within its mouth are the rare ironbearing bacteria *Gallionella ferruginea* Ehrenburg, previously reported in only three other places in the United States.

Dating from the last ice sheet, perhaps 28,000 years ago, the spring has built up a huge half-cone of orange-red marl and travertine. The date is known because the spring is so situated that the

Donor of the forest laboratory, the late Hugh Taylor Birch (at right), shown here with Arthur E. Morgan, former president of Antioch, and Mrs. Morgan

The Glen, with its cascades and springs, its wealth of native trees and shrubs, has been noted for its beauty for a century or more. Present plans call for its development as a natural woodland for research and study

ice sheet would have pushed away any previous deposit, if indeed the spring existed before the glacier came along. The spring deposit has been tunneled by the Antioch Geology Department and fossil specimens of all stages secured. When these are deciphered, they should make a complete climatic record of southwestern Ohio since the last ice age. The deposition of the spring is so rapid —about four tons a year—that an excellent fossil record of leaves and mosses has been left.

Geologically, of course, the yellow spring is about the youngest thing in the Glen; the streams are enormously older, and the gorges were already deeply cut when the glacier arrived.

The Glen lies near the boundary of an oak-hickory area and the beech-birch-maple-hemlock area of middle-southern Ohio. It is also near enough to the Kentucky and Tennessee hills for the tulip tree to grow plentifully. While the hemlock and other evergreens are rather scarce, the Glen has an experimental pine plot acquired from Bryan State Park. The region produces fine maple, oak, ash and many of the nut trees. Of the flowering trees, redbud mingles with five species of dogwood to make May one of the Glen's most beautiful months.

A good deal of the timber in the Glen, including the big oaks near the spring, is probably virgin. There are a number of exceptionally large specimens of wild cherry and hackberry. Many ornamental or unusual trees have, of course, been planted on the Antioch campus. The real significance of the tract, however, is not these unusual specimens, but the great variety of valuable species native here.

This picturesque spot has also had a long human history. Two Neolithic skeletons were found in the vicinity; then the Mound Builders came, leaving a six-foot mound in the Glen not far from the spring. During Indian days, the Glen was on the famous Bullskin Trace, which ran from the Ohio River to Detroit. Tradition records that the cascades were the favorite meeting place of Shawnee lovers. Indian skeletons were also found in a "bone cave" by Antioch students in 1878.

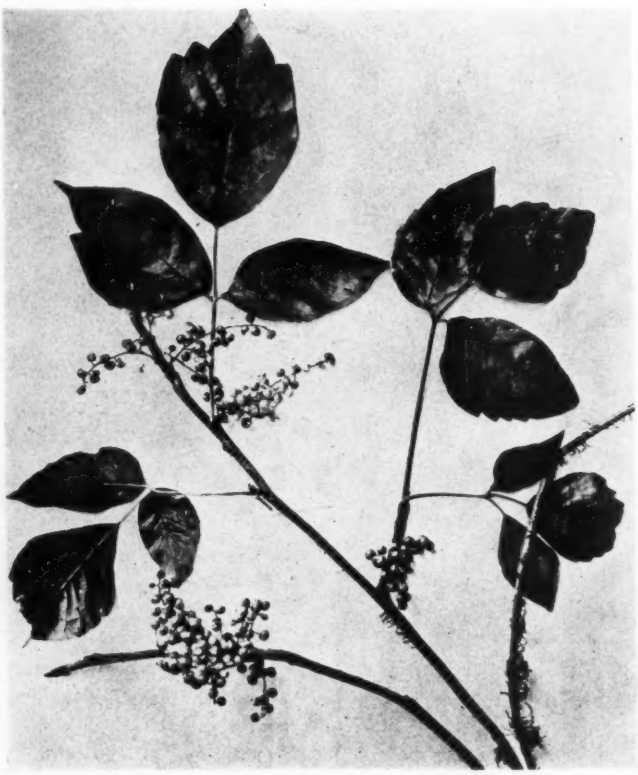
At the beginning of the nineteenth century, the whites began to move in. A tavern was built near the spring in 1804, and soon thereafter came the first printed reference to the spring and its "medicinal" properties in curing rheumatism. Twenty or thirty years later the Glen had blossomed into a fashionable health resort, and families came up from Cincinnati by coach or train to "take the waters." Clay and Webster debated on the Mound in the 1840's.

Today these early structures have disappeared and the Glen has gone back to nature. Geology, biology and botany classes make periodic trips through it, and in all seasons of the year students and faculty hike and picnic there. In 1943 the Inman Nature Trail was dedicated in memory of Dr. Ondess L. Inman, recent head of the biology department and the photosynthesis research at Antioch. Marked by the state to make the Glen more accessible to school children especially, the trail is the fifth of its kind in Ohio and the first on land not owned by the state. Dr. Arthur R. Harper, field naturalist in the Division of Conservation of Natural Resources of

(*Turn to page* 320)

HOW TO BEAT POISON IVY

What's New in the Way of Solving an Old and Painful Problem



First step is to recognize the villain when you see it —three leaflets, white berries and long, hairy stems

By SIGMUND SAMETH

"ISN'T that poison ivy growing against your woodshed?" I asked my neighbor.

He turned slowly to contemplate it. "Yes," he said.

"Then why don't you grub it out?" I asked.

"It won't harm, leastwise if you don't touch it," he replied, drawing at his pipe. "And it looks purty growing there."

My neighbor, I discovered, was a philosopher and a man of pronounced esthetic sensibilities.

My own attitude towards poison ivy is completely the opposite. At best this weed is a nuisance in green. At worst, if you are susceptible, it can be itching frenzy for weeks. My own fifty-two-acre farm was a veritable jungle of poison ivy when I moved in a little over a year ago. And while I am not completely free of this pest yet—more than twelve months are required to eradicate ivy completely from a tract as large as mine—at least the enemy is on the run. Between myself, my wife, the hired man, and occasional energetic weekend guests, the situation is well in hand.

Unfortunately, both my wife and I are susceptible to poison ivy. One walk through our woods poking around, cleaning the spring, exploring the brush patches in anticipation of berries yet to come, was enough to settle the matter. Three days later we were both itching and miserable. Four days and we were experts on the topic of poison ivy and could spot the plant fifty yards away.

The first step in our war against *Rhus radicans*, for that is the enemy's name, was the reconnaissance phase. It involved writing countless letters to public health agencies and agricultural extension colleges for circulars and pamphlets. It involved chatting with physicians and dermatologists and the county agricultural agent and a dozen other persons and institutions. Finally a great mass of data was on our side. It was time to take the fight to the enemy in its most active phase—the eradication of poison ivy. Nor was the question of treatment entirely forgotten. No wise general ignores the possibility of military casualties.

The first thing we learned about poison ivy was that it would be a tremendous job sorting out fact from folklore. Even eminent outdoor authorities seem hopelessly muddled on the poison ivy topic. One, for instance, claims that the pollen spores are wind-blown and can cause poisoning without actual contact with the plant. He recommends washing affected parts with soapsuds

No one is naturally immune to ivy poisoning. Exposure to mass growth such as this may render a person sensitive to the poison for a lifetime

and alcohol. He claims having "cured" severe ivy poisoning with tinctures of grindelia. In the light of present day medical and botanical knowledge, these claims simply do not hold up.

The Massachusetts Horticultural Society with fine public spirit has had the eradication of poison ivy as a major campaign for the past two years and has instituted an educational drive which has spread far beyond its own state. In a pamphlet, *What Do You Know About Poison Ivy?* by George Graves, which it recently published, most of the scientific information on poison ivy has been arranged in concise question-and-answer form. Also there are excellent illustrations of poison ivy, poison oak, western poison oak, and poison sumac, as well as the harmless Virginia creeper and Japanese creeper which are often confused with poisonous varieties. It goes without saying that the ability to recognize and identify these plants in their natural surroundings in any stage of foliage is essential before control measures can be instituted. Even if control is not attempted recognition of the plant is useful. In general, the several rather variable native species of the genus *Rhus* which cause ivy poisoning have their leaves divided into three leaflets followed by white fruits. No wonder the campers' doggerel runs:

> Leaflets three, quickly flee.
> Berries white, take to flight.

The skin irritation caused by plants of the *Rhus* genus is due to an oily substance called urushiol. All parts of the plants, including the roots, contain the poison even after long drying. However, it is not possible to be poisoned by pollen "drifting in the air" as has been claimed. The pollen itself is not poisonous; furthermore, it is sticky and is carried by insects.

Ivy poisoning, however, can occur without touching the living plant directly. For one thing, smoke from burning ivy can carry a small amount of poison. Then cases have been reported of poisoning from dried herbarium specimens, from greenhouse fern-fibre containing minute ivy rootlets, from contaminated shoes handled after months of storage, and from cast-off clothing. Free-flowing sap from a tender portion of a bruised living plant is the most dangerous because of ease of transfer to the human skin. Dead, dried portions of the plant contain urushiol, too, but having lost its fluidity, transfer is far less likely.

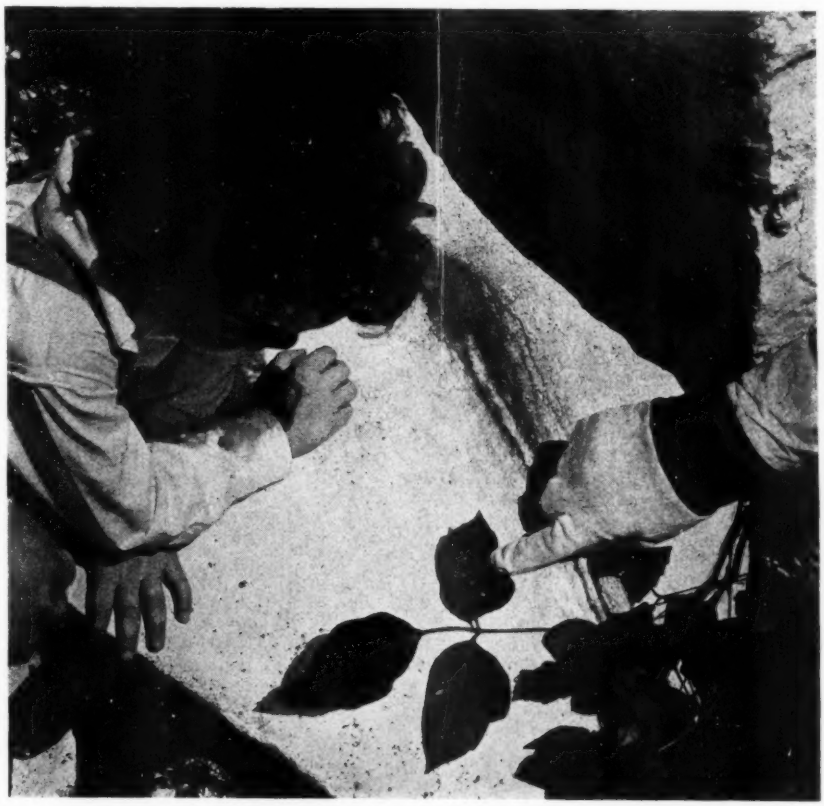
Nevertheless, I can attest from personal experience that *Rhus* oleoresin remains toxic over a period of at least several years. In 1940, six acres of woodland on my farm were cut by a previous owner, and limbs too small for commercial use were piled at the side of the woods lane. To the rotting bark of some of these the characteristic hairy *Rhus* vines were still clinging. In handling these limbs while they were being converted into fuelwood, I developed a severe case of ivy poisoning on the inner surface of both forearms.

Dermatologists have found that human susceptibility to ivy poisoning varies greatly. Apparently, two types of poisoning can be caused. Massive exposure to the sap over a large body area leads to the irritative type of poisoning which shows up within a few hours—redness and swelling of the skin at the point of contact plus an itching or burning sensation which becomes more intense as the inflammation develops. Small vesicles soon appear which tend to run together to form blisters.

After such a single irritative reaction a person is rendered sensitive to ivy poisoning for the rest of his life. The slightest contact with the plant will be sufficient to cause an allergic reaction—the second type of poisoning. No one is naturally immune to ivy poisoning—and the person who claims to be and who rubs sap or crushed plants over a large area of his body in a foolish show of bravado stands a good chance of simply sensitizing himself through a single massive dose.

Artificially induced immunity to *Rhus dermatitis*—skin inflammation—is now being studied with interest by physicians. None of these techniques under investigation are suitable for self-administration by laymen.

The man who probably knows more about poison ivy "cures" than anyone in this country is an unsung Army sergeant named Schapiro, who before the war was a chemist in a New Jersey flavoring extract firm. Clad in heavy garments and goggles and treated canvas gauntlets, he has been combing the woods near Ft. McPherson, Georgia, and bringing back bulging sacks of poison ivy plants. The long, leafy, hairy-stemmed vines are cut into three-foot lengths and hung in bundles in a curing shed. From these Schapiro concocts a tincture of the toxic oleoresin. The dried, crushed plants are soaked in alcohol until it turns an intense green; then the solution is filtered and put up in vials for shipment to Army camps throughout the Southeast, where ivy poisoning causes from fifteen to thirty



The best "cure" for ivy poisoning is to avoid it. Children especially should know its habits if the plant is not well controlled or exterminated

percent of summer and fall casualties.

To cure an ivy-poisoned soldier, according to the Army's technique, as reported by a news magazine, one-tenth of one cc. of the extract, diluted with a small amount of salt solution, is injected intramuscularly with a hypodermic needle. Within a few hours all burning sensations vanish. In a few days blistering ceases. Untreated cases, on the other hand, often suffer from one to three weeks, sometimes requiring hospitalization. It is emphasized that the tincture does not *prevent* ivy poisoning. It acts as a desensitizer only after an attack and its action is part of a complex allergy phenomenon which as yet is only partly understood by medical men. If the tincture is permitted to touch the surface of the skin it produces characteristic ivy poisoning.

Many chemical preparations have been suggested in the past to be used before or after exposure to destroy the poisonous principle. These are usually oxidizing agents which are supposed to render non-irritant the active principle of the plant. Potassium permanganate has long been a favorite among these. Farmer's Bulletin No. 1166, issued by the U. S. Department of Agriculture, for example, recommends a five percent solution applied locally as a remedy. After exposure, fluid extract of grindelia is often used. Some physicians prescribe bathing affected parts in concentrated epsom salts hoping to secure some dehydrating action and reduce the pustules thereby. It is also frequently suggested that, to prevent spreading, the pustules be broken and the straw-colored fluid wiped up with cotton pledgets soaked in alcohol. Another hint from the vast body of medical folklore connected with *Rhus:* coarse laundry soap should be used to wash the affected parts to "remove" the oleoresin. Some of the soap lather should then be permitted to remain on the skin so that its alkaline reaction can "neutralize" the acidity of the poison.

All of these practices are of doubtful value. The dermatitis-producing fraction of poison ivy sap apparently adheres to sensitized skin cells in a matter of seconds. To be effective, the preventives would have to be applied almost at the instant of exposure. Applied sooner, oxidizing agents would have lost their capacity to oxidize. Applied later, and the damage is already done. Even vigorous soap washing is questioned by dermatologists. Under experimental conditions in which scientific "check" experiments were also performed, soap washing was found to have absolutely no favorable effect at any stage in the development of the dermatitis.

Lately the U. S. Public Health Service has developed what it feels is an improved protective measure against poison ivy in the form of an ointment whose active ingredient is sodium perborate—also an oxidizing agent. When first tried and used in a vanishing cream base, the perborate's oxygen was permitted to escape and the ointment became quickly ineffective. The new formula, made with either of two bases, has greater stability although it would appear that anything which hindered the rapid oxidation of the perborate would also hinder its desired oxidation-effect on the toxic oleoresin of *Rhus.*

FORMULA 1

Castor oil	21.5%
Olive oil	21.5%
Lanolin, anhydrous	21.5%
Diglycol stearate	12.9%
Paraffin, refined	8.6%
Boric acid	2.0%
Sodium perborate	10.0%
Duponol WA pure	2.0%

FORMULA 2

Cetyl alcohol	35.1%
Stearyl alcohol	5.3%
Ceresin	3.5%
Castor oil	20.8%
Mineral oil	21.9%
Duponol WA pure	1.7%
Sodium perborate	10.0%
Boric acid	1.7%

According to the Public Health Service, this ointment, taken from a closed jar prepared reasonably recently, should be applied thickly to exposed portions of the skin such as hands and face *before* contact with poison ivy. After exposure clothes must be removed before the ointment is washed off. Otherwise unprotected skin areas may be exposed to clothing which has become contaminated. Tools and instruments or clothing which have been used in cutting poison ivy must be decontaminated before being used again. It is suggested that a one percent solution of calcium hypochlorite be used for this purpose by washing clothes or immersing tools for fifteen or twenty minutes.

For treating already contracted cases of ivy dermatitis Public Health Service dermatologists have found tannic acid effective. Their technique consists of rubbing off the tops of formed vesicles by vigorous application of alcohol saturated gauze. The area is then allowed to ooze serum momentarily. After this is removed, a ten percent aqueous solution (freshly prepared) of tannic acid is applied. In a series of test cases this caused the lesions to crust over completely and the patient's distressing subjective symptoms were removed. This radical new treatment is undoubtedly worth further study—by medical men, not amateur experimenters.

As may be seen from the foregoing, the treatment of ivy poisoning is a discouraging problem. The available preventives or remedies are all of questionable value or still in the experimental stages of development. Aside from the new tannic acid treatment, still unproven on a large scale, and hypodermic injections suitable for administration only by a physician, there is no remedy which the sufferer can apply to hasten the progress of his affliction.

Any preparation to induce comfort and alleviate the symptoms may be used. There seems no merit in the common advice not to use greasy preparations for fear of spreading the irritation. The oleoresin is not spread from one part of the skin to another or from one person to another by means of the blister tops or the watery exudations. It does not matter what is applied so long as it is soothing. In the writer's long and painful experience with ivy poisoning it has been found that calamine lotion is as good a soothing agent as any, especially if there is added to it just enough benzocaine (three percent) to give a mild anesthetic action locally.

Obviously, the ideal solution to the poison ivy problem is the eradication of the plant entirely—a solution which is just as obviously impossible of attainment. The plant is of absolutely no economic use, yet its distribution is so widespread and its habits so tenacious that we shall probably have it with us until the end of time. It can be kept under check and eventually eradicated in limited areas, however.

It would seem that cutting down the plant by means of scythes or bush-hooks would discourage it, yet *Rhus* apparently thrives on just such treatment. Cut off the aboveground portion of a vigorous poison ivy plant and within a few weeks it will have grown back again. Theoretically, repeated prunings of this nature following close upon each other should eventually so weaken the root-stock that the plant will perish. This is hardly an expedient procedure, however, requiring as it does continuous attention over a long period of time.

In my farm woods some of the largest trees were festooned with poison ivy. The woody, hairy vine stems were in many cases an inch or more in diameter. These were easy to handle, as a single ax-blow would sever the stem at a convenient height above the ground. The vine stub then sent forth new shoots which were attacked with various spray methods.

An improvement on this technique is the use of poison to kill large specimens of *Rhus.* The Department of Agriculture, in Farmers' Bulletin No. 1526, recommends such a poison for destroying trees in certain types of land clearing operations. Accordingly, I used this poison on ivy—and with complete suc-

cess. By its introduction into the circulatory system of the living vine the leaves wither and fade within a week. The wood is discolored, becomes soft and punky and decays rapidly. To apply, a single ax gash is made in the vine in a downward direction and a small amount of the poison poured into it.

The poison is prepared as follows: Make a paste, using one pound of powdered white arsenic and a small amount of water. Then dissolve two pounds of household lye in a gallon of water and, while the water is still hot from the lye, add the arsenic paste a little at a time, stirring all the while until it is dissolved. Use extreme care in handling this poison. The fumes given off during mixing are deadly and should not be inhaled. Also, all utensils used in its preparation or application should be destroyed. Livestock will be injured or killed if given a chance to lick the poison after it has been applied. One treatment is sufficient.

For those who hesitate to use such dangerous poisons other methods are suggested. Small plants growing in the open can be grubbed out bodily. Any fragment of the root which remains, however, will send up new sprouts.

Poison ivy may also be destroyed by the use of flame. Pressure type weed burners may be used, as may a small hand blow-torch improvised for the purpose. The flame is played momentarily on the foliage at the point where the three leaflets come together. The leaves wilt immediately without any physical bruising to release the dangerous sap. In two weeks the patch should be reworked.

Common salt has always been recognized as a herbicide, and against poison ivy it is also effective. The usual method is to apply the salt—the cheapest, coarsest grade obtainable—directly to the earth at the base of each plant, relying on natural moisture to carry the solution to the roots. Unfortunately, salt is non-selective in its herbicidal action so that plants and even small trees nearby may be destroyed along with the poison ivy. This type of treatment is perhaps best suited to eradication of isolated clumps such as those growing on fence-posts.

All plants depend for their life-processes on the use of their leaves, which manufacture from the raw-stuffs found in nature the more complex organic nutrients necessary to support life. The destruction of the vine by leaf searing depends on this fact. Likewise, by the use of various sprays, the leaf may also be rendered functionless. The important point to observe in all spray campaigns is to be *thorough*. Every leaf must be reached by the solution. You cannot starve the plant to death if you permit a few untreated leaves to remain.

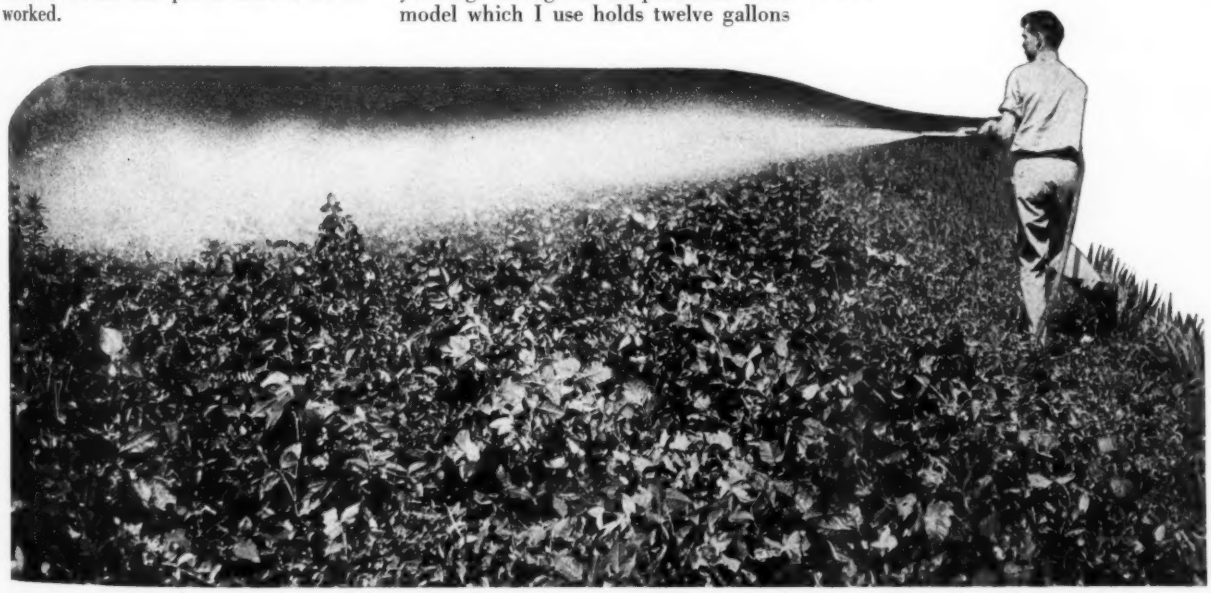
Simplest of the spray mixtures is again—common salt. It is used in the form of a strong brine—three pounds to every gallon of water. If the water is made slightly soapy beforehand its "wettability," or surface tension, will be decreased and it will spread more evenly over the surface of the leaves.

Many types of sprayers are available and of these I have found the wheelbarrow type outfit economical in first cost yet large enough to be practical. The model which I use holds twelve gallons of spray solution and delivers it at the end of the nozzle at a pressure of two hundred pounds. The factor of pressure has no bearing itself on the spraying operation, yet an outfit delivering a spray at high pressure will permit ample coverage even in the center of an extensive clump of ivy without endangering the operator. This treatment is best applied during late spring when the plants are growing vigorously. The first spraying will insure complete defoliation of the mature leaves. A second spraying three weeks later followed by a third in three weeks will complete the job.

Crankcase oil thinned with kerosene until it sprays easily and applied like the brine solution also destroys poison ivy, perhaps even more effectively than salt for late-season defoliation.

Ammonium sulfamate, recently marketed under the trade name of DuPont Weed Killer is perhaps the most effective spray yet developed. The new herbicide is non-poisonous, free from fire hazard, and sterilizes the soil for a brief period only. Properly sprayed weeds are eradicated permanently. The chemical is absorbed into the foliage and thence down to the roots. One pound is used for each gallon of water, which is usually sufficient to treat an area ten feet square or more. The solution does not injure the bark of trees with which it comes in contact. It must be kept away from all valuable foliage, however.

Everything considered, and when feasible, the best way to beat poison ivy is a thorough and sustained spray campaign.



A thorough and sustained spray campaign will generally conquer poison ivy. Ammonium sulfamate, a war development, is particularly effective. Salt or oil, properly treated and applied, may also be used

YOUTH TAKES OVER

Oregon High-School Boys Plant Six Miles of Trees Along Famous Tillamook Burn — Proving They Can Do a Man-Sized Conservation Job

By ARTHUR W. PRIAULX

FIFTY-TWO high school boys, pinch-hitting for their elders busily engaged in war work, have completed the first phase of a face lifting operation, Paul Bunyan scale, in northwestern Oregon. During March, these husky youngsters, working week-ends, planted 120,000 two-year-old Port Orford cedars along six miles of the famous Wolf Creek Highway which traverses the Tillamook burn.

Today only fire-blackened snags border this great highway, Portland's short route to the Pacific beach resorts, monuments to the terrible forest conflagration which in twenty days in August, 1933, destroyed 300,000 acres of Douglas fir forests. Tomorrow a wide border of green cedar trees will cover the unsightly scars of this costly, man-caused forest fire.

A two-year dream came true with the planting of these first cedar seedlings. Private forest operators, both loggers and sawmill men of that section of Oregon, have been working out details on this roadside beautification project with state forestry officials for the past two years. They were all ready to start the winter of 1942-1943, when seedlings must be planted, but the wartime manpower shortage put the red light against the planting.

Wartime tree planter examining root system of Port Orford cedar

This past winter private operators and state forestry officials got together again and decided to try high school boys as tree planters, in order to use the seedlings which were available at the forest industry nursery at Nisqually, Washington. Part of the 5,000,000-seedling annual capacity of this nursery was earmarked for the Wolf Creek Highway project and the operators wanted to use it.

The project was a cooperative venture between the private operators and the State of Oregon. The industry put up the money and supplied the trees from its nursery and the State Forestry Department, represented by Lynn Cronemiller, assistant state forester, furnished supervision and transportation for the boy tree planters from their homes at Timber, Forest Grove and Hillsboro.

On March 11, Cronemiller and seven assistants got under way with fifty-two 'teen-age lads, all eager to help out in

this job and prove they could handle a hazel hoe (planting tool) as effectively as their elders. They did. Adult planters generally average around 500 trees daily. These husky lads, all under draft age, many of them but fifteen years old, maintained a fast pace and equalled the records set by adult crews in prewar days.

Planting had to be done on week-ends to avoid conflict with school work, and in two week-ends this crew of western boys planted 120,000 seedling trees. This is back-breaking work. Each tree has to be carefully planted to assure its survival. The boy planter has only his hazel hoe, a sort of adz, as a tool. Strapped to his side is a bag full of the seedlings.

There are about four distinct operations in planting, but these lads soon worked out a smooth technique and it was difficult for an observer to distinguish a break in their rhythm. They would sink the hazel hoe into the ground a half pace ahead of them, dip the handle and pull out the hoe full of soil; then with the left hand they take a tree from the bag, hold it in place with the finely developed root system at the bottom of the hole, and shove the dirt back covering the roots thoroughly. They would then stamp the dirt down firmly to eliminate all air holes, for fungus will grow on the roots of the tree if air is present. The tree to be properly planted must resist a firm pull. Seedlings were planted to a depth of fourteen rows on either side of the highway at six-foot intervals, which is about the average distance allowed in hand-planted areas.

Port Orford cedar has its habitat about 150 miles south of this area in Oregon's Coos and Lincoln counties, but it was planted here because it grows rapidly, about one to two feet each year, and because its distinct color sets it out from other evergreen trees.

This year's planting—six miles along both sides of the highway—is the start of a three-year program. The Wolf Creek highway extends twenty-five miles through the Tillamook burn, and all the traveler sees for miles on either side are giant snags of the once mighty forest.

This project in reality gives a preview of some of the work which will be done in Oregon's burned forest areas after the war when labor is available. Private forest land owners have an extensive rehabilitation program outlined and surveyed which will require more than 2,000,000 seedling trees annually. The state and federal governments both have similar programs which will give work to veterans and others.

Other Oregon forest operators have been watching the Wolf Creek Highway planting with interest, and already plans are being made by operators in the Tillamook region for a similar program on Wilson River Highway, just to the south, which goes through the southern portion of the burn.

These plans, the operators say, are part of the industrial forest policy of western forest landowners to rehabilitate reburned lands and to bring them back into a state of maximum production. Such a policy, they point out, will help perpetuate the forest products industry by insuring a permanent supply of timber.

In the meantime, while their elders are busy with the war, Oregon's high-school boys are doing a man-sized job.

Ahead lies the job — some of the fifty-two Oregon high-school boys who on two week-ends in March planted 120,000 trees—fourteen rows deep—along both sides of the fire-scarred Wolf Creek Highway

WAR ON SHADE TREES

By P. L. BUTTRICK

RESTORATION of European cities and countryside will not be complete until miles of shade trees along streets, highways and country roads, and in parks and on home grounds have been replaced and grown to their former size and glory.

No city can be intensively bombed and burned without its shade trees being destroyed or reduced to blackened hulks defying even the best efforts of the tree surgeon. One has only to visit the newsreels to see what happened to the trees of Stalingrad which the Russians had so proudly planted; nor is it probable that many lindens will have escaped Allied bombs falling on *Unter der Linden* in Berlin.

On private estates and home grounds the destruction will be equally severe. The desperate shortage of wood fuel has already resulted in many trees grown for shade and beauty being cut to serve for warmth and cooking. The severe rationing of firewood in France means that home owners have cut not only shade but fruit trees.

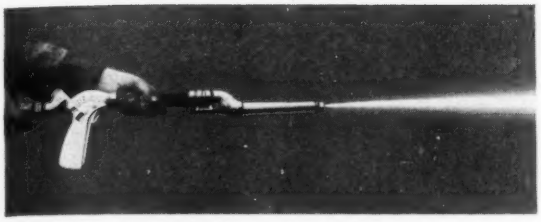
Park trees also have suffered, if not for fuel for other war purposes. Last summer a Paris newspaper stated sadly that "there are still a few trees left in the Tuileries Garden." Earlier reports told of heavy cuttings if not complete destruction of the famous park forests of the Bois du Bolougne, Vincennes and Fontainebleau and many others surrounding Paris. They contained some of the finest trees in all Europe. The Germans needed them for military purposes.

No one who has traveled in Europe will forget the long rows of stately planes, poplars and other trees lining the national highways and local roads. Felled across the roads, they block enemy advances for many hours. The Imperial German armies of an earlier war learned how to guard their retreats by attaching special cartridges to roadside trees and blowing them down wholesale. The Nazis have not forgotten that trick and are using it today in Italy. They will doubtless soon be using it in France and later in Germany. However, Nazis do appreciate trees. Transocean, a German radio, reports with satisfaction that 300,000 fruit trees have been transplanted to Germany from the Russian Ukraine since 1942. Members of a former AEF who followed the German retreat remember seeing orchards cut down which the "boche" had no time to transplant, and there will be more of this. But it will stop at the German frontier. Such destruction is of military value only when done in the enemy's country.

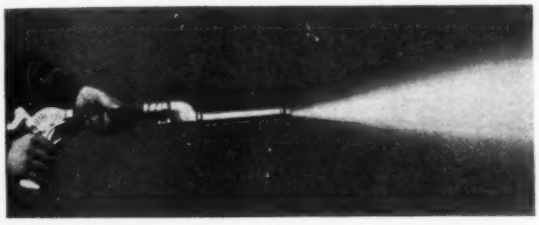
Marked for death were these shade trees along the Naples-Benevento road in Italy. The Nazis tied electric bombs to their trunks in an abortive attempt to blow them across the highway to block the advance of the Fifth Army

YOU MUST HAVE 800 LBS.

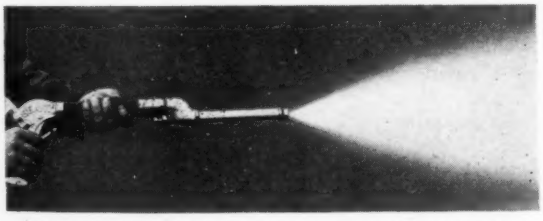
for High-Pressure Fog Fire Fighting!



STRAIGHT FOG STREAM! Employed when needed to get to tops of trees or to reach extremely hot fires, often against the wind.



SEMI OR HALFWAY FOG! A trigger adjustment of the gun provides a discharge midway between the straight power stream and the close up fog. Sweeps out ground fires fast!



COMPLETE FOG CLOUD! This adjustment is desirable for close up work. It is particularly useful in quenching on-the-surface fires.

Fight Forest Fires the Modern Way with the Super FMC Fire-Killing Pressure

You get action — *fast* — with the FMC High-Pressure Fog Fire Fighter.

Why? Because the FMC Fog Fire Fighter Truck carries its own water supply and a dependable high-pressure system — equipment that assures at least 800 lbs. at the pump — 600 lbs. at the gun! This high pressure "blasts" the water into the burning trunks, into the packed leaves and rotten wood, tears them apart and quenches the fire. It's the pressure that does it.

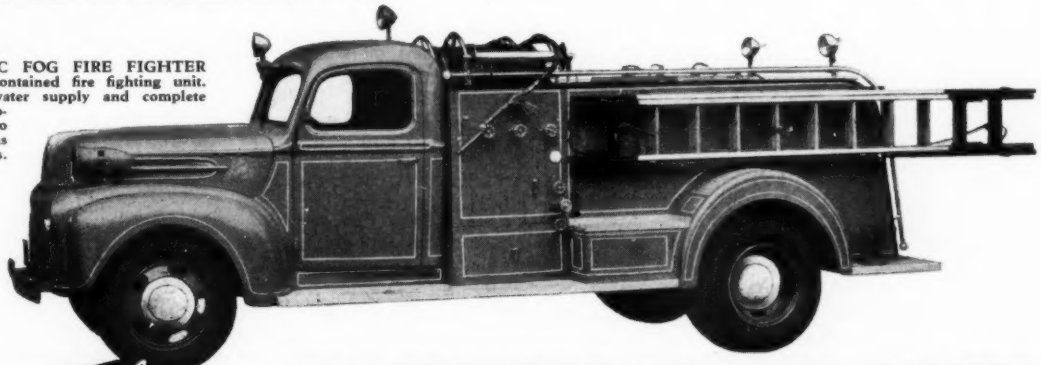
One gallon of this finely-atomized water, properly used, has the fire quenching possibilities of 35 gallons of low-pressure water. A big advantage where water is scarce and doubly efficient on your building fires in the forest fire area!

Only the FMC Fire Fighter packs the needed punch to *produce* and *maintain* 800 lbs. pump pressure and to *hold* 600 lbs. nozzle pressure. There's nothing else like it!

In addition to our standard units — we build special units for small pick-up trucks and larger units to use behind crawlers. Capacities range from 8 GPM to 60 GPM — pressures from 500 to 800 lbs. Military units are now being used with great success for brush, structural and gasoline fires.

For complete information — write the John Bean Mfg. Co., Lansing, Michigan, or the Bean-Cutler Division, Food Machinery Corporation, San Jose, California.

STANDARD FMC FOG FIRE FIGHTER TRUCK. A self-contained fire fighting unit. Carries its own water supply and complete fire fighting equipment. Provides two guns of 30 gallons each at 600 lbs. nozzle pressure.



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THE LAND WE LIVE ON, by Carroll Lane Fenton and Mildred Adams Fenton. Published by Doubleday, Doran & Company, New York. 87 pages, ills. Price $2.50.

Mr. and Mrs. Fenton have made a real contribution in this little book, just from the press. They say it started itself—from the interest taken by boys and girls in his radio program—"Science Everywhere." This may well be, for this fascinating broadcast was rooted in broad knowledge of the natural sciences. Their book—this story of the land—how it builded through the ages,—mountains, plains, mesas, valleys—all the forms it has taken due to natural causes or as modified by man, this story—told in brief but lucid, poetic paragraphs illuminated by clear, speaking photographs, is destined to delight youngsters from five to fifty.

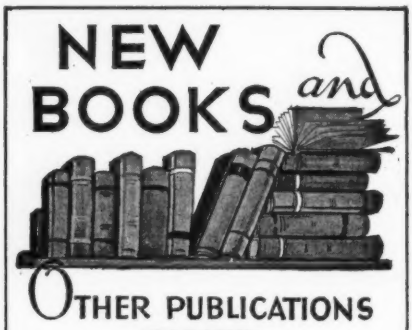
THE NEW GARDEN ENCYCLOPEDIA, edited by E. L. Seymour. Published by William H. Wise & Company, New York City. 1348 pages, illustrated. Price $3.00.

This revised, enlarged edition of the popular garden encyclopedia carries valuable and indispensable information for the gardener, assembled in immediately accessible form, and brought down to the minute. Clearly and bountifully illustrated, factually verified by the highest horticultural authorities, written in plain, non-technical English, it answers practically every question a gardener can ask.

OUR COUNTRY'S NATIONAL PARKS—Vols. I and II, by Irving R. Melbo. Published by The Bobbs-Merrill Company, Indianapolis, Indiana. 244 pages each, illustrated. Price: School edition, $1.28 each; Trade edition, $2.00 each.

Because each of the national parks represents something of special interest and significance to all Americans and particularly to the youth of our land, these two volumes describing their magnificent scenery and unsurpassed natural phenomena have been prepared. Running the gamut of the national parks, Vol. I begins with the great Yellowstone and the remarkable story of the establishment of the national parks, through the Mesa Verde—with all its ancient wonder, while Vol. II picks up with the Yosemite and ends with our beautiful tropical national park in Hawaii, with its two fiery craters.

The chief idea of the author, who is Professor of Education at the University of Southern California, was to furnish adequate study material to meet the steadily growing demand, suitable for use in the public schools, and he has certainly accomplished his purpose in these large, comprehensive and richly illustrated volumes.



A list of Selected Books on Forestry and related fields of Conservation is available to members of The American Forestry Association on request.

PALESTINE, LAND OF PROMISE, by Walter Clay Lowdermilk. Published by Harper & Bros., New York, N. Y. 236 pages, ills. Price $2.50.

The dream of the restoration of Zion by the Jewish people as their national home has never died out in two thousand years, and in this book Dr. Lowdermilk presents a plan—a huge reclamation plan—that seems to meet, broadly and constructively, the essential needs: to solve the many heretofore seemingly insurmountable difficulties in the way of the achievement of a national homeland by a people tragically persecuted for centuries, whose sufferings have peaked appallingly with the rise of Nazism. It involves basically the right use of the land and proposes establishing an Authority in the Jordan Valley, patterned much after America's own TVA,—which is an amazing example of what can be done through reclamation, irrigation, drainage, and modern methods of use of natural resources. The distinguished author believes that his plan is not only the solution of an age-old problem, but that it will support at least four million refugees in addition to the more than two million Jews and Arabs already living there and working cooperatively. And that it offers as well a model for other long-neglected lands of the Near East, where populations can adjust to right handling of land resources. Dr. Lowdermilk, — noted soil conservationist, forestry engineer and hydrologist — has written a great book. Simple and direct, it is based on fact and stems from his deep knowledge of facts more amazing in their implications than the highest flights of fancy. It must have engrossed him in writing, as it will you—in reading.

The publications listed below must be ordered direct from the addresses as given and not through the Association.

Simplified Method for Determining Condition of White-tailed Deer Herds in Relation to Available Forage, by Barry C. Park and Besse B. Day. For. Serv., U.S.D.A., Tech. Bull. No. 840. Supt. of Docs., Wash., D. C. Price, 15 cents.

Northern Idaho Forest Resources and Industries, by S. Blair Hutchison and R. K. Winters. For. Service, U.S.D.A. Misc. Pub. No. 508. Supt. of Docs., Wash., D. C. Price, 30 cents.

Soy Beans and Soil Conservation, by Dwight D. Smith. Agr. Expt. Sta., Bull. No. 469. Univ. of Missouri, Columbia, Mo.

The Effect of Slope on Soil Erosion, by H. H. Krusekopf. Agr. Expt. Sta., Research Bull. No. 363, Univ. of Missouri, Columbia, Mo.

Forest Resources of the Delta Section of Mississippi, by W. S. Stover. For. Surv. Rel. No. 53. Progress Rep., Sou. For. Survey. Sou. For. Expt. Sta., New Orleans, La.

Fish For Food From Farm Ponds, by Verne E. Davison and J. S. Johnson. Soil Cons. Serv., U.S.D.A., Farmers Bull. No. 1938. Supt. of Docs., Wash., D. C. Price, 10 cents.

Stumpage and Log Prices for the Calendar Year 1941, compiled by Henry B. Steer. Forest Service Statistical Bull. No. 78. Supt. of Docs., Wash., D. C. Price, 15 cents.

Food For Freedom by Better Range-Conservation Practices in the Pacific Northwest, by W. T. White, W. R. Frandsen, R. R. Humphrey and N. T. Nelson. Soil Cons. Serv., U.S.D.A. Misc. Pub. No. 514. Supt. of Docs., Wash., D. C. Price, 10 cents.

Fifty-five Years of Agricultural Research on Ranch and Range, by S. B. Doten. Agr. Expt. Sta., Bull. No. 163, Univ. of Nevada, Reno, Nevada.

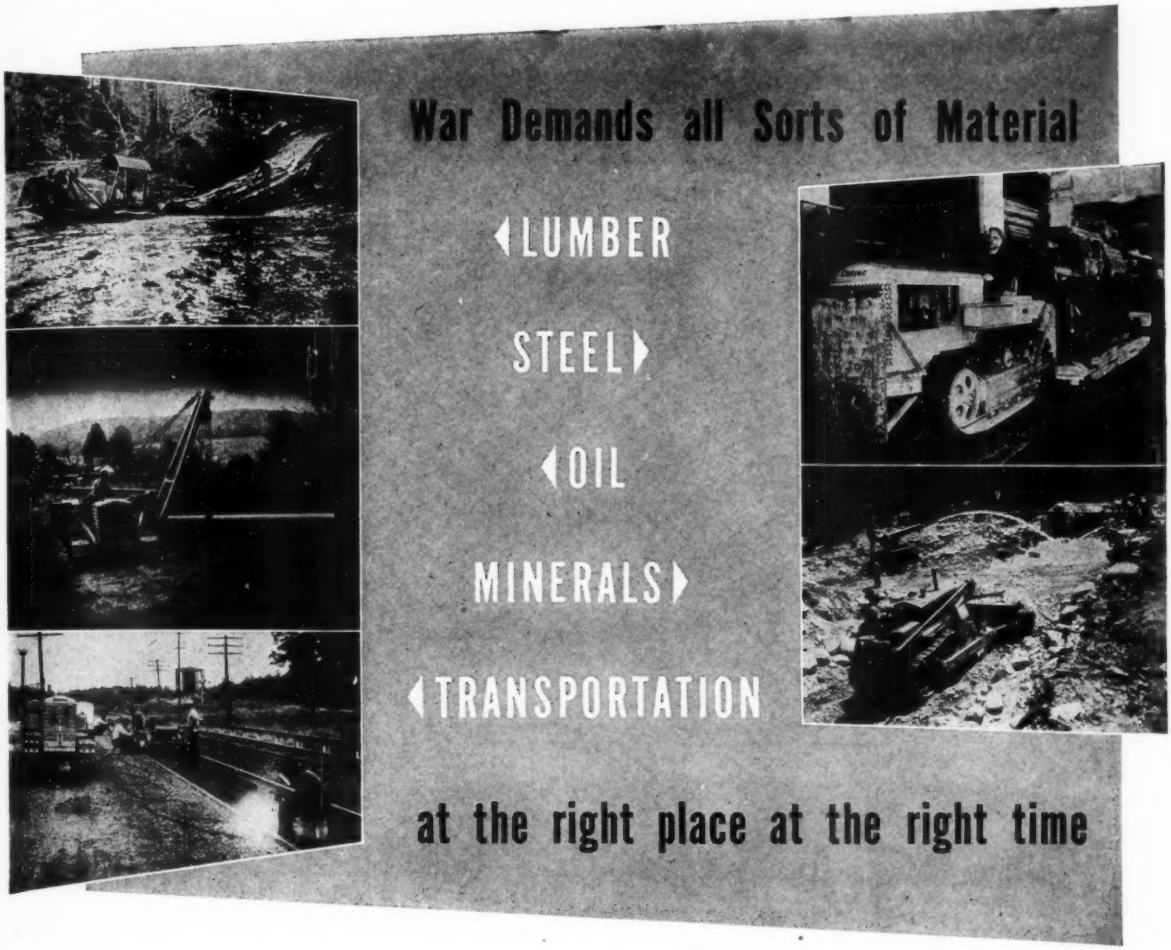
Woodlands in the Farm Plan, by John F. Preston. Soil Cons. Serv., U.S.D.A., Farmers Bull. No. 1940. Supt. of Docs., Wash., D. C. Price, 10 cents.

The Composition of Paper and Paperboards Manufactured in 1939, by R. V. Reynolds and Albert H. Pierson. Forest Service, U.S.D.A., Circ. No. 668. Supt. of Docs., Wash., D. C. Price, 10 cents.

Pennsylvania Game Commission, Biennial Report, 1941-42, Harrisburg, Pa.

Practical Forestry in the Hudson Highlands, by Henry H. Tryon. The Black Rock Forest Bull. No. 12. Cornwall on Hudson, N. Y. Price, $1.00.

Elk—Food—And Winter, by Victor H. Cahalane, reprinted from *Outdoor America*, The Izaak Walton League of America, LaSalle Hotel, Chicago, Ill.



BACK of the battle lines throughout the world, Cletrac Tru-Traction tractors are helping to produce the sinews of war in sections long distances from civilization. In logging camps—on oil fields—in mines—on new highways—wherever heavy hauling, bulldozing or earth moving must be accomplished, Cletracs are doing the job economically and dependably.

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While we are still producing to meet the demands of war, with a large part of Cletrac standard production running into 1945 required to complete present contracts, the over-all production of Cletracs has been so greatly increased, that a substantial number of Cletracs are being released for essential civilian use. These tractors are allocated according to government regulations. Your Cletrac dealer will gladly assist you in making application for a new Cletrac if you can qualify as an essential user.

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CLETRAC REPORTS ON ITS WAR EFFORT

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TREE QUIZ

NUMBER THREE

By "MOOSEWOOD BILL"

1. What tree of northern Africa looks like a larch but by contrast is an evergreen?
2. What two common trees of the eastern United States are both known as "ironwood"?
3. Throughout Canada, northern Europe and Siberia, what kinds of trees have roots so tough that they can be used for all sorts of binding purposes?
4. If you had some dry tea, matches, a knife but no pail or other utensil, what tree would furnish the necessary "where-with-all"?
5. What native trees probably have the most "colorful" common names?
6. What kind of wood will burn when green?
7. How would you distinguish between a "hard pine" and a "soft pine"?
8. What trees furnish the preferred bark food of the beaver?
9. From what tree did the pioneers make a quinine substitute?
10. What is the tallest pine in the world?

Courtesy McGraw-Hill Book Company

What Is It?

FOR ANSWERS—TURN TO PAGE 315

WPB Approves First Wood Alcohol Plant

WPB CHAIRMAN NELSON early in May announced approval of the first American plant to produce alcohol from wood waste. The $2,247,000-project, to be financed by the Defense Plant Corporation, will be built at Springfield, Oregon, for the Willamette Valley Wood Chemical Company. Designed to start production next spring, the plant will produce 4,100,000 gallons of alcohol a year.

The project has been held up for months by WPB's requirements committee on the basis that it could not be completed in time to materially aid in the war effort. Objections were finally overruled by Chairman Nelson, however, because of the exploratory value of the project.

The Springfield plant will utilize the so-called Scholler process, long in operation in Germany, and recently adapted to American conditions and woods (see "Wood Chemistry Comes of Age," by J. A. Hall, in February issue). Pilot plants in Michigan have produced consistent yields of alcohol in excess of fifty gallons a ton of wood waste. This equals yields from blackstrap molasses, and more than doubles the amount produced by the old American process.

Migratory Waterfowl Increase 400 Percent

AN INCREASE of nearly 400 percent in the population of game species of migratory waterfowl in North America during the past nine years has been revealed as the result of the annual inventory of migratory waterfowl conducted by the Fish and Wildlife Service of the U. S. Department of the Interior.

The present estimated population of 125,350,000 birds is probably the greatest since the early 1920's, according to Dr. I. N. Gabrielson, director. At the low point of the "duck depression" in 1934 and 1935 the migratory waterfowl population had fallen to 27,000,000.

Among the ducks, the largest increases have been shown by the mallard and the pintail. The total population of the mallard now is around 40,000,000, of the pintail more than 20,000,000. Scaups, redheads, baldpates, black ducks, canvasbacks and ruddy ducks also showed satisfactory increases, but decreases were recorded for a few species including the gadwall, green-winged teal, blue-winged teal, ring-necked duck and the shoveler.

The estimates for the goose population do not show important changes, while the whistling swan population appears to have suffered some losses.

THE FMC *Original* Fog Fire Fighter, originated and developed by Food Machinery Corporation, produces a dense fog which extinguishes the hottest fires as if by magic! This *different* fire fighting machine, delivering 600 pounds pressure at the nozzle, is a self-contained unit one man can operate single-handed! • The remarkable engineering skill and manufacturing resourcefulness that builds these Fire Fighters also created and manufactures FMC "Water Buffalo" amphibious tanks—weapons now helping the Army, the Navy and Marines smash the Japs on land and sea.

At right are shown a few representative products of Food Machinery Corporation, world's leading makers of food processing and packing equipment.

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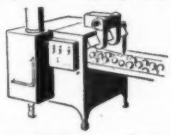
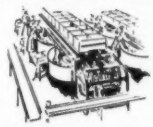
Sprague-Sells Division. . . . A complete line of machinery for canning foods. Hoopeston, Ill.

Niagara Sprayer & Chemical Co. . . . Insecticides for protecting crops from insects and disease. Middleport, N.Y.; Jacksonville, Fla.; and Burlington, Ont., Can.

Bean-Cutler Division. Sprayers, Dusters and Packing House Equipment for Fruits & Vegetables, Fog Fire Fighters, Turbine Pumps. San Jose, California.



Texas Division . . . Protective Processes, Canning Machinery, Fruit and Vegetable Packing Equipment. Harlingen, Texas.



Florida Division . . . Citrus and Vegetable Packing Equipment, and Food Protective Processes. Dunedin and Lakeland, Florida.

Peerless Pump Division. Deep well turbines, hi-lifts & pumps handling water for every purpose. Los Angeles and Fresno, California; and Canton, Ohio.

Riverside Division. Citrus Packing Equipment, Automatic Box Making and Lidding Machinery, Fruit and Vegetable Protective Processes. Riverside, Calif.

JOHN BEAN MFG. CO.
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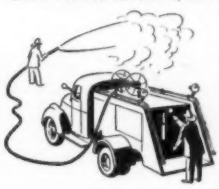

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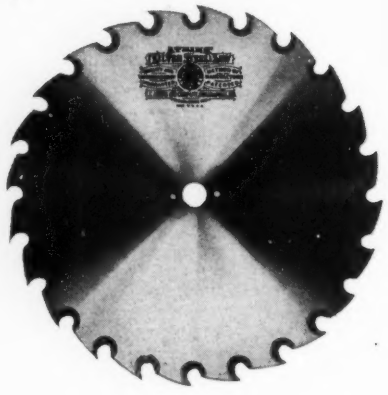

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Forsling New Grazing Service Chief; Forest Service Reassigns Kotok and McArdle

FOLLOWING approval by the Senate on May 10 of the nomination of Clarence L. Forsling, assistant chief of the U. S. Forest Service in charge of research, to be director of the Grazing Service, Department of the Interior, Chief Forester Lyle F. Watts announced these transfers and appointments within the Forest Service:

C. L. Forsling

Edward I. Kotok, assistant chief in charge of the branch of state and private forestry since 1941, to succeed Mr. Forsling. Richard E. McArdle, director of the Appalachian Forest Experiment Station at Asheville, North Carolina, since 1938, to succeed Mr. Kotok. Because of a current postwar planning assignment, Mr. McArdle will not take up his new duties until late summer.

Mr. Forsling, a recognized authority on the relation of forest and range vegetation cover to water runoff and erosion, having pioneered in research in that field, is a native of Wyoming. A graduate of the University of Nebraska, he entered the Forest Service as a grazing assistant in 1915, later becoming director of the Intermountain Forest and Range Experiment Station at Ogden, Utah, and the Appalachian Station at Asheville. He was assigned to Washington in 1937.

Mr. Kotok, who received his degree of Master of Science in Forestry at the University of Michigan in 1911, served as a forest supervisor in California before heading the California Forest Experiment Station at Berkeley, in 1926. In this capacity he played a large part in the development of the San Dimas Experimental Forest and the San Joaquin Experimental Range in southern California. Mr. Kotok, Russian born, was reared in New York City.

Mr. McArdle, a native of Kentucky, was also educated at the University of Michigan, receiving a Master of Forestry degree in 1924, and a Ph.D. in 1930. He served with the Forest Service at the Pacific Northwest Experiment Station, Portland, Oregon, until 1934, when he resigned to become dean of the University of Idaho School of Forestry. A year later he returned to the Service as director of the Rocky Mountain Forest Experiment Station, at Fort Collins, Colorado, and soon afterwards was transferred to the Appalachian Station. At present, he is chairman of the Agricultural Department Interbureau Committee for Postwar Programs in the Appalachian region.

The Forest Service has also announced the appointment of George M. Hunt as assistant director of the U. S. Forest Products Laboratory at Madison, Wisconsin. For many years chief of the division of wood preservation at the Laboratory, Mr. Hunt, in his new capacity, will serve as Director Carlile P. Winslow's representative in planning, integrating, and coordinating the Laboratory's research program in developing postwar needs and plans.

E. I. Kotok

Since the entry of the United States into the war, extensive research programs for the Army, Navy, War Production Board and other war agencies have been conducted under Mr. Hunt's direction. Plywood and glues for Army and Navy wood aircraft are used according to specifications based on research under these programs and wood aircraft construction, inspection and repair methods have been materially influenced thereby.

A native of Oregon, Mr. Hunt is a graduate of the University of Califorina. Becoming associated with the Forest Service as a chemist in 1911, he was transferred to the Laboratory in 1913, where he has remained ever since. In 1926 he visited Europe to study advances made in wood utilization, inspecting developments in many countries.

R. E. McArdle

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INSIDE COVER

BACK

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THESE useful matches *with your own imprint* are now available in case lots (2,500 books) at only $12.50 a case —Free Delivery on 3 or more cases. Express collect on less than 3 cases. State Tax will be added in the following states: Iowa 2%, California 2½%, Michigan 3%, Ohio 3%, Missouri 2%.

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6-44

CONSERVATION IN CONGRESS

PRESIDENT ROOSEVELT on May 5 signed S. 45, amending the Clarke-McNary Act to provide additional funds for cooperative forest fire protection (see May issue), and this measure is now Public Law No. 296. On May 8, the Senate Committee on Agriculture and Forestry favorably reported H. R. 3848, to continue and keep current the Forest Survey (see May issue). This measure is expected to pass the Senate in the near future.

H. R. 4443, the Agriculture Department Appropriations Bill, passed the Senate on May 17. U. S. Forest Service items were increased by $3,860,938 to a total of $22,018,220.

The forest products research item was increased by $55,000 to a total of $1,147,519. Of this increase, $20,000 was added to the $15,000 allowed by the House for research in the utilization of southern hardwoods, making a total of $35,000. Also, $35,000 was authorized for forest products investigations in the northeastern states.

Forest management research was increased by $15,000 to a $513,848 total. This was authorized to increase the total amount available to combat the spruce budworm in states bordering Canada to $55,000, of which $30,000 is available to the Bureau of Entomology and Plant Quarantine and $25,000 to the Forest Service.

The Senate also increased the item for range investigations from $288,475 to $323,475. Of this increase $10,000 is for research in converting cutover Douglasfir land to grazing and $25,000 for research on reduction of the big game population on national forests and grazing lands. The Senate also increased the forest economics item by $10,000, for studies to be conducted by the Allegheny Forest Experiment Station in the anthracite forest region.

An attempt by Senator Chavez, of New Mexico, to have a $5,593,800 item included in the bill for postwar planning for forestry was defeated.

Other items of forest conservation interest remain the same as approved by the House.

CONSERVATION CALENDAR

Important Bills in Congress With Action
April 25—May 17, 1944

Bills Enacted

S. 45—McNARY—To further amend section 3 of Public Law No. 270, approved June 7, 1924 (Clarke-McNary), providing for forest perpetuation and extension by increasing the annual authorization therefor and extending aid in combating tree insects and diseases. Passed Senate July 3, 1943. Amended and passed by the House April 20, 1944. Approved by the President May 5, 1944. Public Law No. 296.

S. J. RES. 112—BAILEY—Authorizing and directing the Fish and Wildlife Service of the Department of the Interior to conduct a survey of the marine and fresh water fishery resources of the United States, its territories and possessions. Passed Senate March 14, 1944. Passed House May 2, 1944. Approved by the President May 11, 1944. Public Law No. 302.

Appropriations

H. R. 4070—WOODRUM—Independent Offices Appropriation bill for the fiscal year ending June 30, 1945. Passed House January 31, 1944. Amended and passed by the Senate March 24, 1944. In conference May 8, 1944.

H. R. 4443—TARVER—Making appropriations for the Department of Agriculture for the fiscal year ending June 30, 1945. Passed House March 24, 1944. Amended and passed by the Senate May 17, 1944. In conference May 18, 1944.

H. R. 4679—JOHNSON, Oklahoma—Making appropriations for the Department of the Interior for the fiscal year ending June 30, 1945. Passed House April 27, 1944. Referred to the Senate Committee on Appropriations April 28, 1944.

Conservation

S. 1895—GILLETTE (H. R. 4764—HAYS)—To provide for making surplus materials, equipment and supplies available for soil and water conservation work through the distribution thereof, by grant or loan, to public bodies organized under state laws, etc. Introduced May 8, 1944. Referred to the Committee on Agriculture and Forestry.

Forestry

H. R. 4278—PACE—To provide for the control and eradication of certain animal and plant pests and diseases, to facilitate cooperation with the states in fire control, to provide for the more efficient protection and management of the national forests, to facilitate the carrying out of agricultural conservation and related agricultural programs, to facilitate the operation of the Farm Credit Administration and the Rural Electrification Administration, to aid in the orderly marketing of agricultural commodities, and for other purposes. Passed House March 7, 1944. Amended and passed by the Senate May 1, 1944. In conference May 3, 1944.

National Forests

S. 1618—THOMAS, Utah—To amend the acts of August 26, 1935, May 11, 1938, June 15, 1938 and June 25, 1938, which authorize the appropriation of receipts from certain national forests for the purchase of lands within the boundaries of such forests, to provide that any such receipts not appropriated or appropriated but not expended or obligated shall be disposed of in the same manner as other national forest receipts, and for other purposes. Passed Senate March 14, 1944. Passed House May 15, 1944.

S. 1867—MCCARRAN—Relating to the management and administration of national forest grazing lands. Introduced April 28, 1944. Referred to the Committee on Public Lands and Surveys.

Research

H. R. 3848—RANDOLPH—To amend section 9 of the act of May 22, 1928, authorizing and directing a national survey of forest resources. Passed House April 20, 1944. Reported without amendment (No. 863) by the Senate Committe on Agriculture and Forestry May 8, 1944.

Water and Stream Control

H. R. 4485—WHITTINGTON—Authorizing the construction of certain public works on rivers and harbors for flood control. Passed House May 9, 1944. Referred to the Senate Committee on Commerce May 10, 1944.

H. R. 4741—SPENCE—To provide for water pollution control activities in the United States Public Health Service. Introduced May 3, 1944. Referred to the Committee on Rivers and Harbors.

Miscellaneous

H. R. 4740—ROBERTSON—To designate the white flowering American dogwood as the national flower of the United States. Introduced May 3, 1944. Referred to the Committee on the Library.

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THE FOREST RESOURCE APPRAISAL

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IMPORTANT? It's the most important conservation job that needs doing.

WHY? When the war has run its course and reconstruction is at hand, conservation must present an informed—not an "I don't know"—front in respect to forest conditions if it is to have and to hold its rightful place in shaping our postwar American economy.

HERE is a joint responsibility of all conservation interests—public and private alike—in preparation for the war's end when our boys will be coming back and like us on the home front will want conservation to have a factual, realistic and sound foundation upon which to build our country's future.

SO, let's make it a joint undertaking. The Association's project offers you this opportunity. Additional underwriting is necessary. The goal is $250,000—over four-fifths of which has now been promised. As of May 20, the list of contributors includes 22 Conservation and Trade Associations; 90 Industrial Companies; and 317 Individuals. We invite your help in the financing. Do it now with a cash contribution, a pledge, or, during the Fifth War Loan, buy a Series F or G War Bond in the name of The American Forestry Association and mail it to us.

THE AMERICAN FORESTRY ASSOCIATION
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Washington 6, D. C.

THE FOREST RESOURCE APPRAISAL

Walnut Project Launched

THE American Walnut Manufacturers Association has launched a forestry and conservation project to encourage the growing and harvesting of American walnuts as a permanent crop. The area to be covered by the project includes the states producing walnut in commercial quantities—Arkansas, Illinois, Indiana, Iowa, Kansas, Kentucky, Missouri, Ohio, Tennessee, West Virginia and southern Michigan.

William C. Finley, who received his degree in forestry at the University of Michigan, will direct the program as association forester. His intial work will be with state extension foresters, state foresters and area foresters. Special attention will be given youth organizations, with emphasis on 4-H Clubs. Primary objectives will include the establishment of approved forestry practices, reforestation, fire protection and dissemination of information.

The natural purpose of the undertaking, according to Burdett Green, secretary-manager of the association, is to ensure a continuous supply of this American cabinetwood for the future.

Graves Heads Advisory Committee on Forestry

HENRY S. GRAVES of New Haven, Connecticut, has been selected by the United Nations Interim Commission on Food and Agriculture to serve as chairman of an advisory committee on forestry. Formerly chief forester of the United States and dean of the Yale Forest School, Mr. Graves also has served a number of terms as president of The American Forestry Association.

The Interim Commission, which was established by the Hot Springs Food Conference, is developing the groundwork for a permanent international organization on food and agriculture. It will prepare recommendations for consideration by the United Nations as to the scope and organization to be set up as a permanent institution. Recently, it was decided that forestry should be included within the scope of work of the Commission, and the forestry committee will advise on forestry and forest products in the permanent organization.

The activities of his new assignment will be closely related to Dean Graves' present work with the National Research Council.

Nationals of other countries are being invited by the Commission to serve as members of the committee. Dr. Egon Glesinger, of Poland, has already been appointed.

New State Foresters

KENTUCKY and Idaho have announced the appointment of new state foresters—H. B. Newland in Kentucky to succeed George P. Anderson, and Stanton G. Ready in Idaho to succeed Franklin Girard. Connecticut previously had announced the appointment of Dr. A. Raymond Kienholz to succeed Austin Hawes, who resigned early in the year.

Mr. Newland has been assistant state forester since 1936. Prior to this he served as a timber buyer and as foreman

Dr. A. Raymond Kienholz

in a CCC camp. He received his B.S. degree in Forestry from Iowa State College in 1931.

Mr. Ready, appointed in Idaho, was formerly a deputy forester and land agent for the State Board of Land Commissioners.

Dr. Kienholz, since 1941 in charge of research for the Connecticut State Park and Forest Commission, holds M.S. and Ph.D. degrees from the University of Illinois. A native of Minnesota, he early engaged in blister rust control, grazing research, and made Douglasfir reproduction studies in the Pacific Northwest. From 1922 to 1924 he was professor of botany at the University of the Philippines in Manila, and later—until 1930—was associated with the botany department of the University of Illinois. In 1932 he became assistant forester at the Connecticut Agricultural Experiment Station at New Haven.

THE MOUNTAIN BUCK SAW
Patent Applied For

Here, again, is an example of Disston's ability to combine alert engineering and seasoned craftsmanship to originate an outstanding wartime tool.

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Putting Fire "On the Beam"

(*From page 291*)

from which the flash could be seen, and thus increase its accuracy and usefulness, it would be necessary to grind a reflecting mirror which would pinpoint the beam on the fire.

With this objective in mind, Silen drew up preliminary sketches for a mirror device which would be economical and simple in construction, as well as practical in use. Working alone in his lookout, his plans were made without reference to any written work. Later he found that the first principles of a heliostat, or continuous reflector, had been laid down almost 300 years ago. The first model, built on the lookout, utilized an alarm clock, a shaving mirror, and pulleys whittled out of a sugar pine board. The results were encouraging, for with this crude device he was able to hold a spot of light on Hanging Rock lookout for an hour and twenty minutes.

At the end of the summer, Silen went back to college determined to build a fire locator based on the reflected spot of light. During the next two years he gave his spare time to the project and built and discarded three models before achieving one which met his exacting standards. A considerable knowledge of astronomy was required so he educated himself further in this field. No metal fittings could be obtained to build the framework so he enrolled in metal working courses and, learning how, machined his own parts. Finally, unable to obtain mirrors of the precise curvature required, he studied the art of mirror grinding and produced a mirror which fitted his specifications. These ideas were persistently and painstakingly developed — a remarkable achievement for an undergraduate.

The final model consists of a primary mirror mounted in a metal frame and turned by a clockwork. As the sun moves across the sky, the moving mirror compensates for its changing position and reflects a beam of light constantly on a secondary mirror. This mirror is fitted with sights so that it can be oriented accurately on the fire, providing a constant reference for the smokechaser.

There is more to the device than just a spot of light. Silen added a yellow band to the upper third of the reflecting mirror, and a red band to the lower third. A smokechaser looking back to the flash would see a yellow light if he were above the fire, a red light if below, and clear light when "on the beam." By careful grinding of the reflecting mirror Silen has been able to produce a field of light 600 by 1,300 feet at a distance of five miles. Within this region, covering the fire as a sort of bullseye, is a brilliantly lighted area 300 by 1,000 feet. At four miles, even in a smoke haze, it is possible to locate the center of the light spot within a fifty foot square. Compared with the vast sweep of country in which a fire must ordinarily be sought, this small, clearly defined area is a lifesaver to the hard-pressed smokechaser.

There are very definite limitations on the use of a beam of light in fire location, as Roy Silen readily acknowledges. The sun does not always shine; the greatest effectiveness of the device is restricted to the area which can be seen from the lookout station; and dense timber prevents constant sight of the flash. Offsetting these disadvantages, however, are certain assured advantages. Anything which aids in the prompt locating of a fire may save a forest; the flash can be detected through openings in the forest when it is not possible to secure a compass shot; the beam puts a helpful landmark on roads and ridges even though it cannot be directed down into valleys unseen from the lookout; and the identification of altitude through the colored bands is a marked improvement in the mechanics of fire location.

The light beam fire locator is not as yet considered a perfect device—but it is a long step ahead in smoothing out some of the obstacles to efficient fire location. The "gadget," as Silen modestly calls it, is the worthwhile product of a keen intellect applied with persistence to a novel situation. Loggers are natural-born tinkerers, and from his several years spent in a logging camp Silen picked up a lot of the logger's enterprise and ability to make things work. Coupling this with a willingness to try over and over again, he improvised when there was nothing at hand to meet his needs. Eventually he was able to evolve a working model of his original idea.

Silen has unselfishly presented his fire

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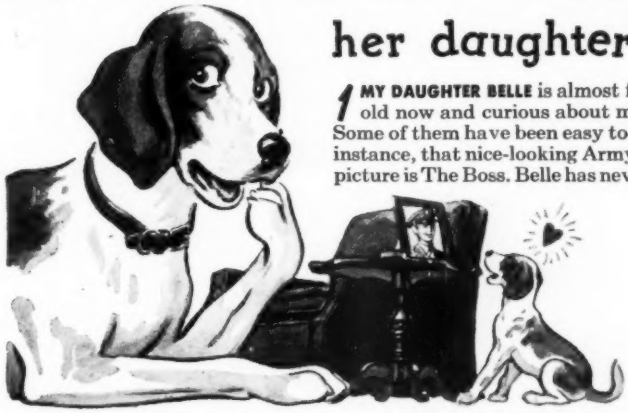
locator to the School of Forestry at Oregon State College without restriction, and with only the hope that it may be of service to forestry. The machine is there today, with a complete set of instructions for its use, and suggestions for improvement of the device if future research is undertaken. Roy Silen cannot carry its development any farther himself. Fittingly enough, he has become a fire locator with an anti-aircraft unit of the United States Army.

ANSWERS
To Tree Quiz No. 3

[Illustration is of male flowers of white ash.]

1. The Atlas cedar, which is a true cedar, *Cedrus*. Our native "cedars" belong to other groups and are called "cedars" only by custom.
2. Hop hornbeam, *Ostrya virginiana*, and American hornbeam, *Carpinus caroliniana*, also called "bluebeech" or "waterbeech."
3. Spruces and larches. The small roots are peeled and if still too large are split. They are unexcelled for sewing bark utensils or for any binding purpose.
4. White birch, either in the northern United States and Canada, or northern Europe and Siberia. While no species of park vandal is worse than the bark peeler, nevertheless when in the wilderness or in an emergency white birch should be appreciated and used. A square of birch bark, pinned at the corners, forms a box which can be set over a small fire. Water can be boiled as long as the fire does not reach above water level.
5. The ashes. We have blue ash, green ash and red ash, to say nothing of white ash and black ash.
6. Almost any kind of wood will "burn" when green if placed upon a vigorous fire. However, only a few green woods can be shaved and the shavings ignited. The most notable of these is white ash.
7. Soft pines lose their bundle sheaths (found at the base of the needles) after the first season; so-called hard pines retain theirs.
8. The aspens.
9. Also the aspens, the bark of which is intensely bitter.
10. The sugar pine of California, one of which is 246 feet tall.

How much should a mother tell her daughter?



1 MY DAUGHTER BELLE is almost four months old now and curious about many things. Some of them have been easy to explain: for instance, that nice-looking Army man in the picture is The Boss. Belle has never seen him.

2 BUT the other day I found Belle nosing around The Boss's favorite .22 rifle—the Remington Sportmaster. "Mom," she asked, "what's this swell-looking gadget for?" Well, how much should I tell her? Obviously, this eager young pup won't know the joys of romping through the fields with The Boss until he gets back. Would her ears droop to learn what she was missing?

3 I DECIDED on frankness. "Belle," I said, "that's a Remington Sportmaster bolt action .22 repeater—made by the same people that made The Boss's Model 31 shotgun. The Boss and I would go out for long cross-country walks together, and he'd take along this Sportmaster and some Remington Hi-Speed .22's—'just for the fun of it,' he always said. And what fun it was!

"And when the boss comes back, what swell times we'll *all* have! The Boss, Remington Sportmaster, you and I. But that's something to be very patient about, Belle."

4 AND THEN BELLE SAID something that made me very proud of her. "Gosh, Mom," she sighed happily, "that *does* sound doggy! And will you teach me what to do so that The Boss will like to have me along?" My daughter was no longer the heedless, scatterbrained Belle of puppyhood. She was growing up!

▶ Remington has produced vast supplies of military arms and ammunition for our armed forces. For months on end we produced 30,000,000 rounds of military small arms ammunition—*per day!* We also produced—*per day*—more than enough military rifles to equip an entire infantry regiment at full fighting strength! And soon—we hope—we will once more be able to furnish sportsmen with Remington shotguns and rifles. Remington Express shells, Remington Hi-Speed .22's with Kleanbore priming, and Remington big game cartridges with Core-Lokt bullets. *Remington Arms Company, Inc., Bridgeport, Conn.*

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SAVE-THE-REDWOODS LEAGUE
250 Administration Building,
University of California, Berkeley, Calif.

Fishing

(*From page* 287)

see and hear and feel them subconsciously. They are a part of every riffle, every pool, every well-laid cast. The wind in the trees, the music of water against rocks and logs and sand, the background of singing birds—the melody of the wilderness, is a part of your day. Take them all away and you might well be marooned out in space, flinging bare hooks at a chunk of raw beefsteak.

The day moves swiftly and soon the sun is overhead. You stop for lunch on a flat rock in the middle of the stream—sandwiches made of breakfast ham and jam and butter, perhaps a couple of hardboiled eggs. A banquet indeed. As you munch away you recall vivid moments of the morning. The three trout in your creel are beauties—but you are thinking of the two big ones that got away. You'll know those pools if you ever see them again — even ten years from now — every hemlock sprig and laurel leaf that borders them. That biggest trout looked like a torpedo. He charged the fly and cleared the riffle by a yard—well, almost a yard. He tested the backbone of the rod in your hands. and the quickness of your wrist. He sawed the leader on a rock and jumped again in a shower of bright spray. He got away, though, when he charged downstream between your legs.

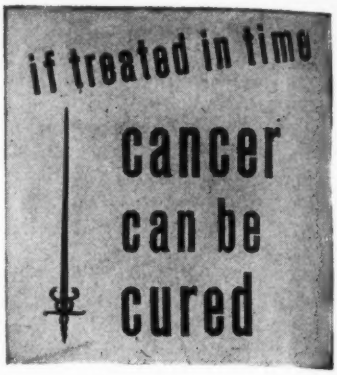
For an hour after lunch you smoke a slow pipe and watch the life of the forest. But this is the siesta hour and there is little movement. So you doze in the sunlight, waiting for the world to waken again.

When it does, you are in the stream again, fishing a mite too fast. You must reach that pool before dark, the one that holds the big trout. And almost before you are ready for the twilight, it is upon you. The sun has gone into a cloud bank and is dropping like a ball of flaming iron into the mountains beyond the river head.

With the day over you are suddenly weary. Your legs are tired from the pressure of water. Your shoulder aches from the constant pressure of the rod. The five fish in your creel will make a meal for a king. You caught them yourself and you are the king.

Walking home in the gloom, you wonder vaguely about what they did at the office or the plant. You are physically too tired to care. Your mind is too completely relaxed to worry. Tomorrow is another day.

You've spent the whole day on the stream. You are tired, but somehow you feel refreshed, and you can tackle tomorrow with assurance that comes only from internal peace.



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Britain's Parks

(*From page* 285)

its secluded ghylls and valleys. The Bowland area passed from the Crown many years ago, and is now a sheep-farming and agricultural district in its least wild parts. Already well-used as a retreat by townsfolk of central Lancashire and the not-far-distant West Riding of Yorkshire, it is not surprising that the proposal to preserve it as a national park is receiving strong support.

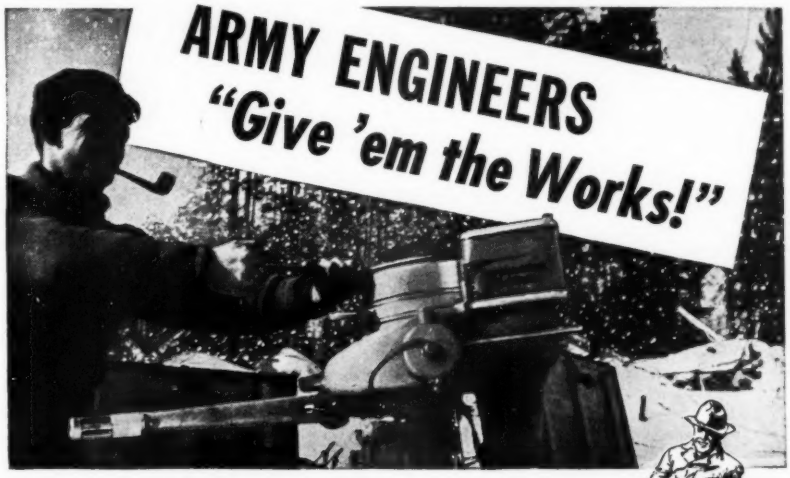
The Derbyshire Peak District and the Yorkshire Dales are also listed. The National Trust, though possessing very few properties in Yorkshire, does have many properties in Derbyshire. They cover 2,500 acres, and include lovely Dovedale, together with hundreds of acres of woodland and open country. Here again, the American-founded Pilgrim Trust helped to put much of this beautiful British countryside into the hands of the British people.

The original proposal of the 1931 government report suggested a sum of £500,000 as satisfactory to establish a national parks scheme in Britain. The money would be used to purchase certain areas, to compensate for restrictions on commercial development, and to provide hostels and other facilities for visitors. As far as possible, timber production and agricultural activities would continue in these parks, but such enterprises would be judged by and made subservient to the use of the regions as retreats.

Today, the initial cost would probably be nearer £1,000,000, but war expenditure has made that sum far less a stumbling-block than it was before. Enthusiasts are also pointing out the success of similar schemes in other parts of the world.

Britain, of course, is much more thickly populated than many other countries which possess national playgrounds, but this fact is being put forward as a further reason why areas should be scheduled for that purpose in Britain. The need for national parks, properly preserved against future encroachment, is regarded as an urgent necessity. There is every likelihood that the demand will be met by the British Parliament, either before hostilities cease or very soon after.

The growing demand for national parks not only reflects the opening up of even the most remote parts of Britain by peacetime motor transport, and the creation—in normal times—of more leisure; it also reflects the rapid extension, among the British people, of a love of wild nature, and a desire to visit and come to know the beautiful, unspoiled scenery of their native land.

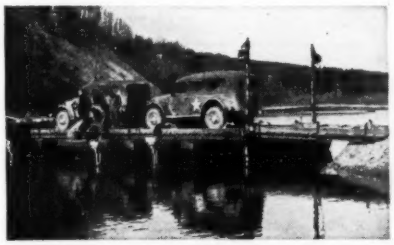


"What would the Ar-my do with-out the En-gi-neers?" pops the $64 question in "Song of the Engineers". A hard one to answer! Wherever the Army advances, in tropic jungle or arctic outpost, the Engineers are out in front preparing the way . . . building air bases for our flying forces . . . throwing bridges across broad rivers . . . constructing highways over formidable mountain ranges . . . resourcefully transforming all kinds of "impossible" assignments into routine tasks.

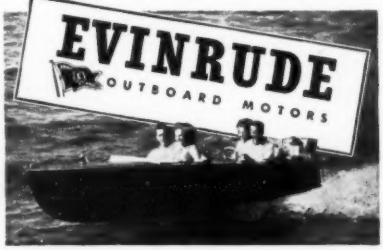
Speed is a vital factor with the Engineers, and outboard motors have proved highly useful in ferrying, bridging and many other operations. The Evinrude above, fresh from its packing case, will soon know what it is to "get the works" from the Army's hard-working Engineers.

1 Mounted on a standard Engineers' ponton, (the Army term is *ponton,* not "pontoon"), this Evinrude makes fast work of transporting bridge material. It takes *stamina* as well as power to deliver the goods in this kind of service!

2 Ferries built quickly — here's how they do it! Several pontons are decked together with standard bridge material and, with motors mounted, the ferry is ready! Here 3 Evinrudes do a "triple screw" job pushing a truck up stream.



3 Ready to go with another load. Such service is not as spectacular as that performed by the great Evinrudes that drive the Engineers' speedy Storm Boats, but it's important — and it may have to be done under battle conditions!



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Redwood Forestry

(*From page* 290)

effort expended than the standard heavy products.

Another use of the forest is recreation. People in the community for many years have used Joy Woods for picnicking. The only requirement is that they protect plants and game and be careful with fire. A limited amount of camping also has been permitted.

For fire emergency, water barrels are maintained at intervals along woods roads. Backpumps, extra water, and tools are carried in a truck used on the operation. An extension telephone is maintained to the woods. During the fire season, "No-Smoking" signs and other warnings are posted along the roads and at entrances.

Joy Woods has been certified by the National Lumber Manufacturers' Association as the first forest in the redwood region to become a Tree Farm. The project fulfills requirements of assuring a willingness to maintain the designated land for the production of forest crops, providing reasonable protection, and harvesting timber crops from the area in a manner which will insure their replacement. This recognition shows that the policy of management decided on by the owner is broad and progressive and in accord with good forest practices as set forth by the lumber industry. This policy is to manage the forest in such a way as to bring in a continuous revenue and at the same time to maintain it in full productivity.

It was the desire and intent of the present owner to operate the property and yet preserve its productivity and general values that caused her to seek the advice of Professor Emanuel Fritz of the Forestry Department of the University of California. His conception of the possibilities of intensive utilization of redwood forests has been applied. Much assistance has also been given by the Soil Conservation Service in making cruises, maps, growth studies, preservative treatment experiments, cost studies, location of markets, and the experimental planting of Christmas trees and cork oaks. The State Division of Forestry has given aid in trail and fire-break construction and slash burning—has even loaned its fire-fighting equipment.

Joy Woods is managed by the writer, who lives on the property. He makes decisions concerning management plans, supervises all woods operations, handles sales, keeps detailed records and analyzes costs and returns. He endeavors to fit all cutting into a program of building up the annual growth to its maximum.

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Your Invitation To Membership

IN THE AMERICAN FORESTRY ASSOCIATION

TO provide a basis for informed postwar handling of one of the country's most important natural resources, The American Forestry Association on January 1 formally initiated a fact-finding survey to determine what effect the war is having upon the country's forests and forest lands and what will be their condition when the manifold problems of reconstruction are at hand. This important undertaking is known as the Forest Resource Appraisal.

Public-spirited citizens, industrialists and organizations alert to the need of forest conservation and development in postwar economy are making this survey possible by underwriting its estimated cost of $250,000.

Many other individuals and organizations are indirectly supporting this activity through membership in The American Forestry Association. We would welcome your participation in the important program of the Association, and for your convenience the various classes of membership are listed in the coupon below.

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Laboratory

(*From page* 295)

the State Department of Education, rates it as the richest in biological and geological specimens.

Dr. Inman's name recalls other names associated with the Glen: Horace Mann, Antioch's first president, who annually led the student-faculty May-walk there; Edward Waller Claypole, an Englishman who later founded the magazine *American Geologist,* also used the Glen in the seventies as a laboratory. To this end he founded the Little Miami Natural History Society to "encourage among the students of the college a habit of observation and a spirit of research, rather than mere acquisition, in studying the natural sciences."

This sentence of Dr. Claypole's suggests part of the expanded program for Glen Helen under the Birch bequest. The first aim of the college will be to make the Glen even more useful as a laboratory. Wild flower species can be given more protection; better provision can be made for bird and other wildlife; trees can be given better care. Further, preliminary work in forestry can be introduced into the Antioch curriculum.

The second part of the expanded program for the Glen will be its development as a natural wooded tract (not park). The Bryan State Park, adjoining, on essentially the same kind of terrain, already has a plan to introduce all the principal tree types that occur in Ohio, and a similar or supplementary plan could be adopted here.

Part three of Antioch's contemplated program for Glen Helen is research. Experimenting with tree crops, through hybridization and working on tree diseases are two of many possibilities.

Antioch hopes to go forward immediately after the war with this program.

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WHO'S WHO
Among the Authors in this Issue

OREN ARNOLD (*Emergency in Grass*), born on a Texas ranch, has been freelancing in the Southwest since 1931. He has published ten books, stories of the Southwest and radio serials, and his western articles appear currently in national publications. Mr. Arnold now lives on a small ranch near Phoenix.

ARTHUR NETTLETON (*Britain's Postwar "National Parks"*), F.R.G.S., well informed on British national affairs, writes from his home in London.

CHARLES ELLIOTT (*Fishing* Is *Essential*) is now Director of the Georgia Fish and Game Commission. He writes from Atlanta, in typically alluring style, to all lovers of the rod and reel.

STEWART M. SNYDER (*Redwood Forestry*) is a graduate of the University of California and intensely interested in forestry of the practical kind. He traveled a great deal in Europe and North Africa before starting his study of forestry and business management.

C. Brooke Worth

C. BROOKE WORTH (*None Than A Tree That Putteth Forth Leaves*), native Pennsylvanian, has been interested in natural history since he was three. A boyhood outdoors led to a career in natural science, and he became professor of zoology at Swarthmore in 1936.

ARTHUR W. PRIAULX (*Youth Takes Over!*), former newspaper publisher, directs the Willamette Valley Branch of public relations and information for the West Coast Lumberman's Association.

SIGMUND SAMETH (*How To Beat Poison Ivy*)—botanical explorer and popular writer, is deeply interested in the agricultural sciences also. He writes from his farm at Kutztown, Pennsylvania.

DOROTHY HALL SMITH (*A Forest For A Laboratory*) writes from Antioch—the scene of her interesting story, where she has been teaching and writing since 1935.

W. F. MCCULLOCH (*Putting Fire "On The Beam"*) is Assistant State Forester of Oregon, and writes from Salem.

P. L. BUTTRICK (*War On Shade Trees*)—a well-known Yale Forester, is Regional Consultant for the Northeast of The American Forestry Association's Forest Resource Appraisal.

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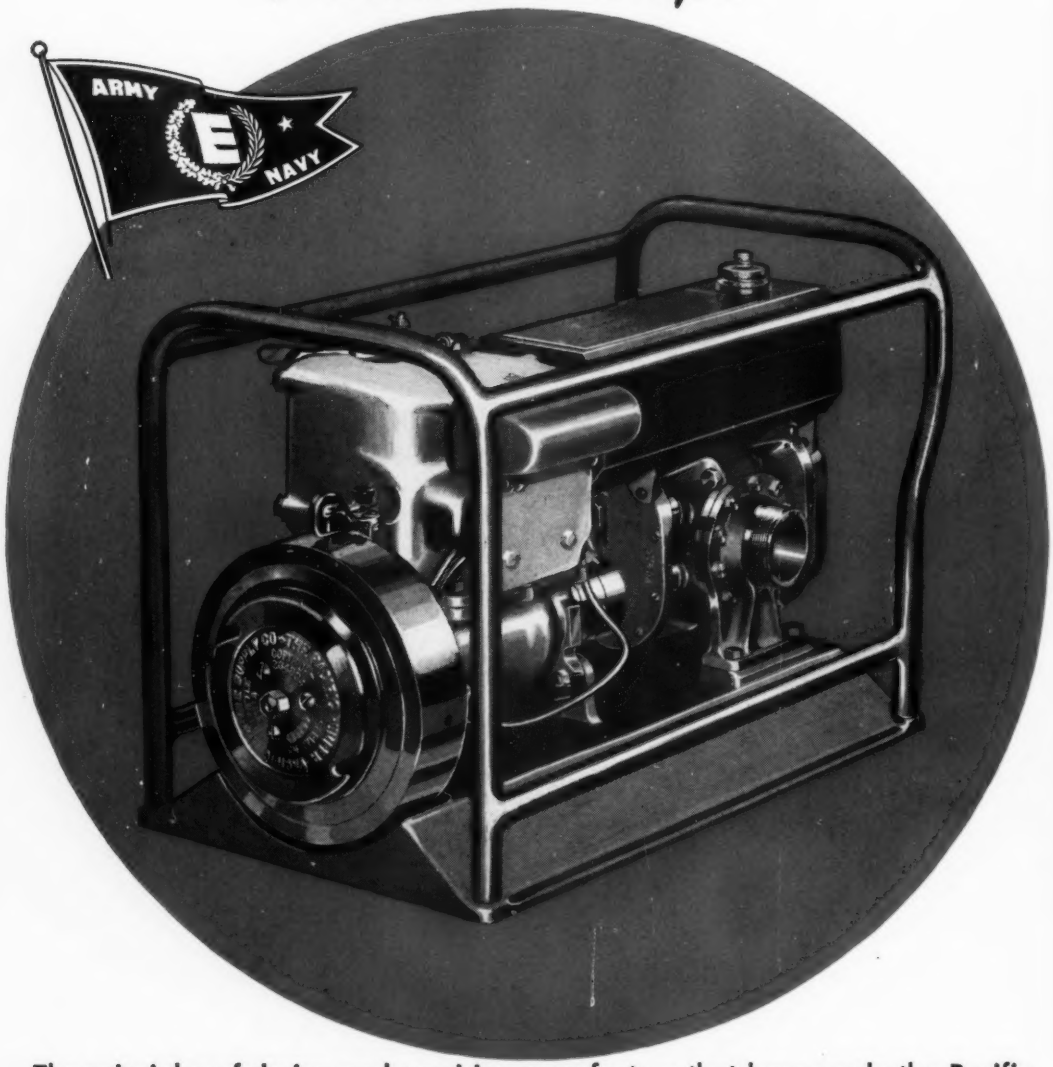

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